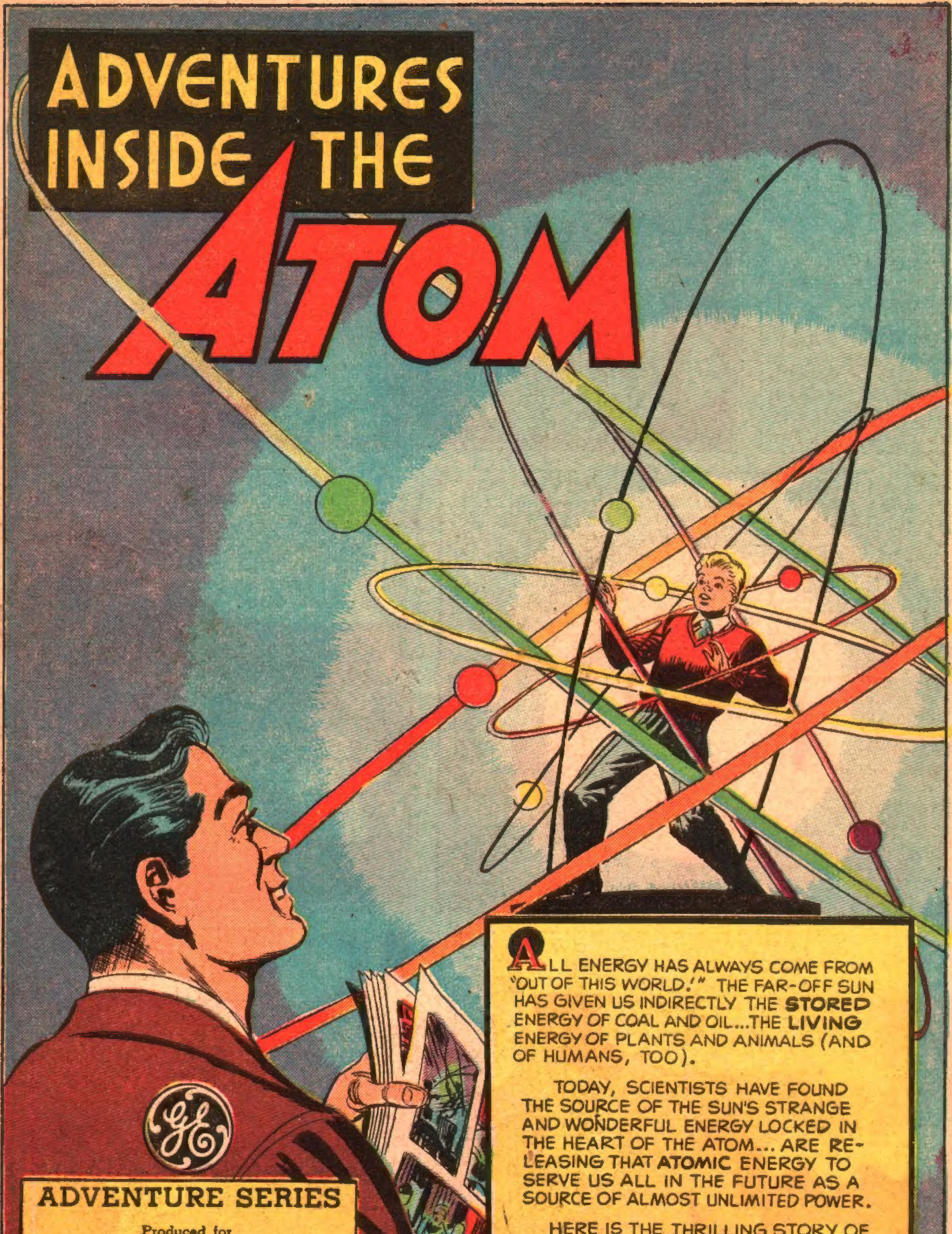
ADVENTURES INSIDE THE ATOM



ALL ENERGY HAS ALWAYS COME FROM "OUT OF THIS WORLD!" THE FAR-OFF SUN HAS GIVEN US INDIRECTLY THE **STORED** ENERGY OF COAL AND OIL...THE **LIVING** ENERGY OF PLANTS AND ANIMALS (AND OF HUMANS, TOO).

TODAY, SCIENTISTS HAVE FOUND THE SOURCE OF THE SUN'S STRANGE AND WONDERFUL ENERGY LOCKED IN THE HEART OF THE ATOM... ARE RELEASING THAT **ATOMIC** ENERGY TO SERVE US ALL IN THE FUTURE AS A SOURCE OF ALMOST UNLIMITED POWER.

HERE IS THE THRILLING STORY OF MAN'S GREATEST ADVENTURE INTO THE UNKNOWN... AND HIS DISCOVERY OF NATURE'S GREATEST SECRET!

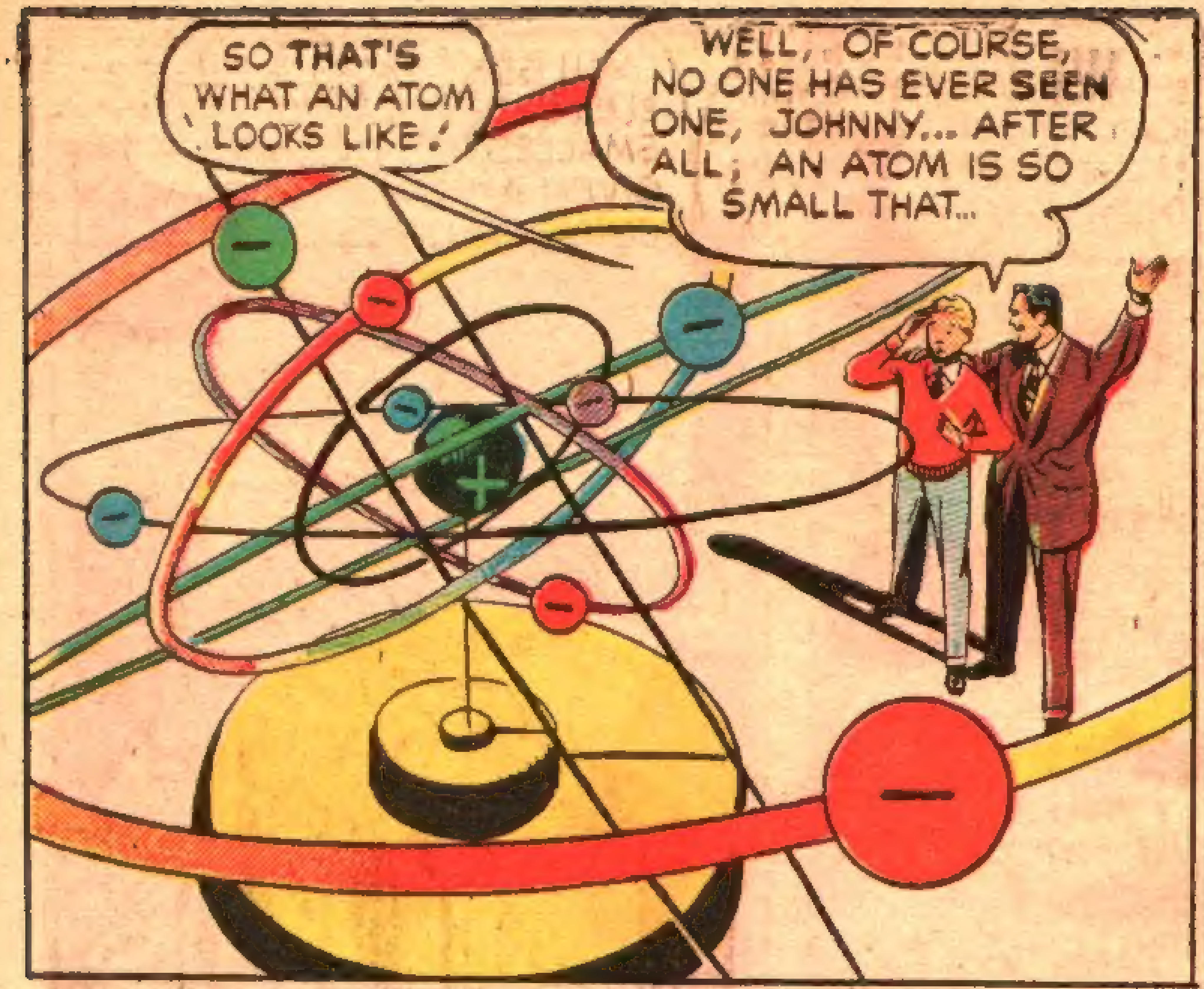
ADVENTURE SERIES
Produced for
GENERAL ELECTRIC COMPANY
By GENERAL COMICS, Inc.

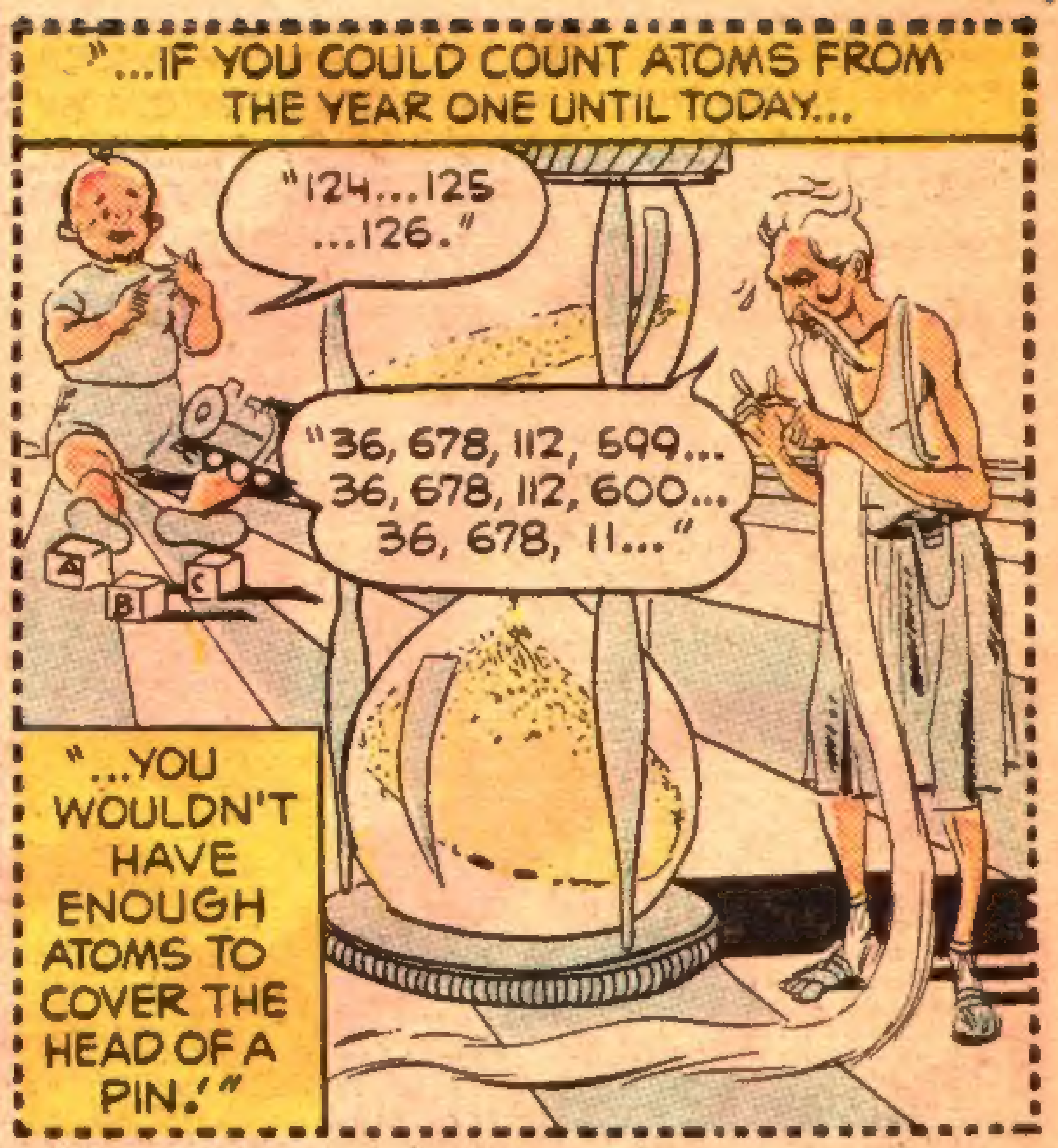
THE STORY OF NUCLEAR ENERGY

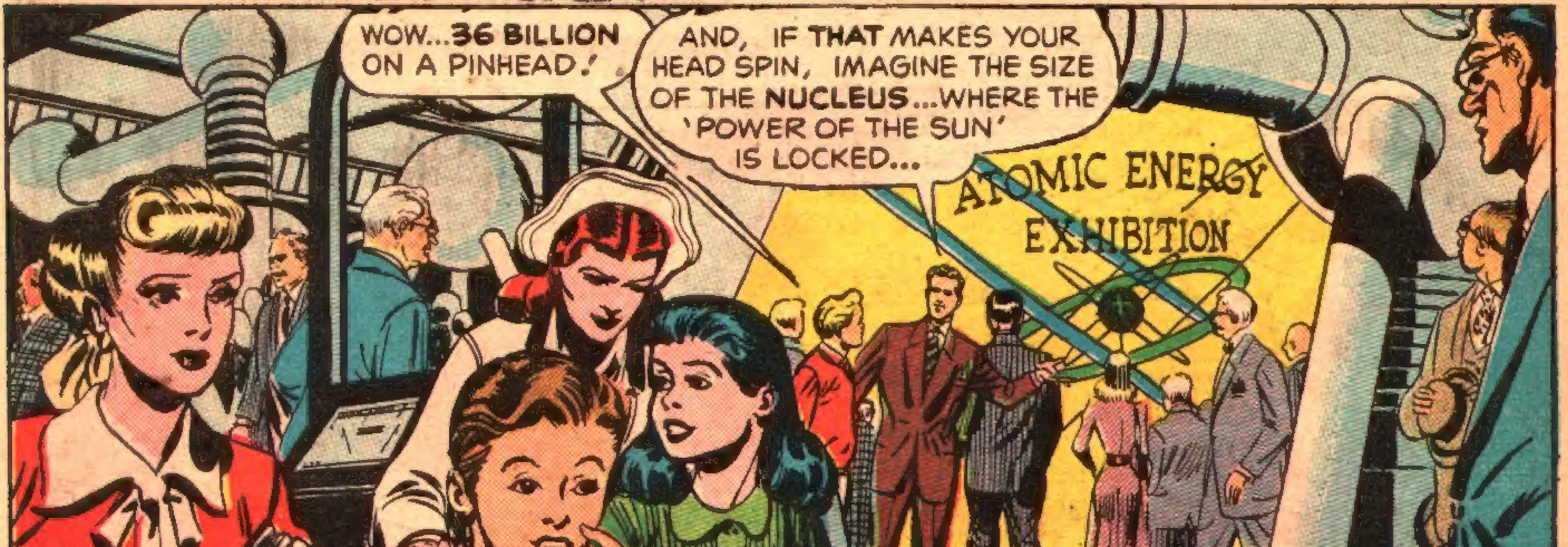
"THE MODERN MIRACLE OF ATOMIC POWER IS THE CLIMAX OF A NEVER-ENDING SEARCH FOR KNOWLEDGE. IT ALL BEGAN MORE THAN 2,000 YEARS AGO IN ANCIENT GREECE..."
YOU ARE A FOOL, DEMOCRITUS! ALL MEN KNOW THAT THIS GOLD IS ONE SOLID PIECE!
NO, I BELIEVE THAT EVERYTHING IS MADE UP OF TINY PARTICLES WE CANNOT SEE.
MIND NOT THOSE DOUBTERS, MASTER ...TELL ME MORE.
ALL THINGS AROUND US--TREES AND STONES AND EVEN OUR OWN BODIES—ARE MADE OF 'BUILDING BLOCKS' SMALLER THAN ANYTHING YOU CAN IMAGINE. I CALL THEM 'ATOMS.'
"AND A FEW YEARS LATER, ARISTOTLE ADDED AN IDEA OF HIS OWN..."
IT MUST BE THAT ALL THE THOUSANDS OF THINGS ON EARTH ARE COMBINATIONS OF CERTAIN BASIC 'ELEMENTS.'
"FOR CENTURIES AFTER THAT, MEN CALLED 'ALCHEMISTS' STRUGGLED TO FIND THE COMBINATION OF ELEMENTS WHICH WOULD MAKE PRECIOUS GOLD..."
MAKE ME GOLD, WISE MAN, AND I WILL GIVE YOU A KINGDOM!
WATCH AS I STIR THIS SECRET MIXTURE, SIRE!
TAKE THAT FOR WASTING THE KING'S TIME!
"AND EVERY MIXTURE FAILED TO MAKE GOLD... BUT ALCHEMISTS KEPT ON TRYING UNTIL..."

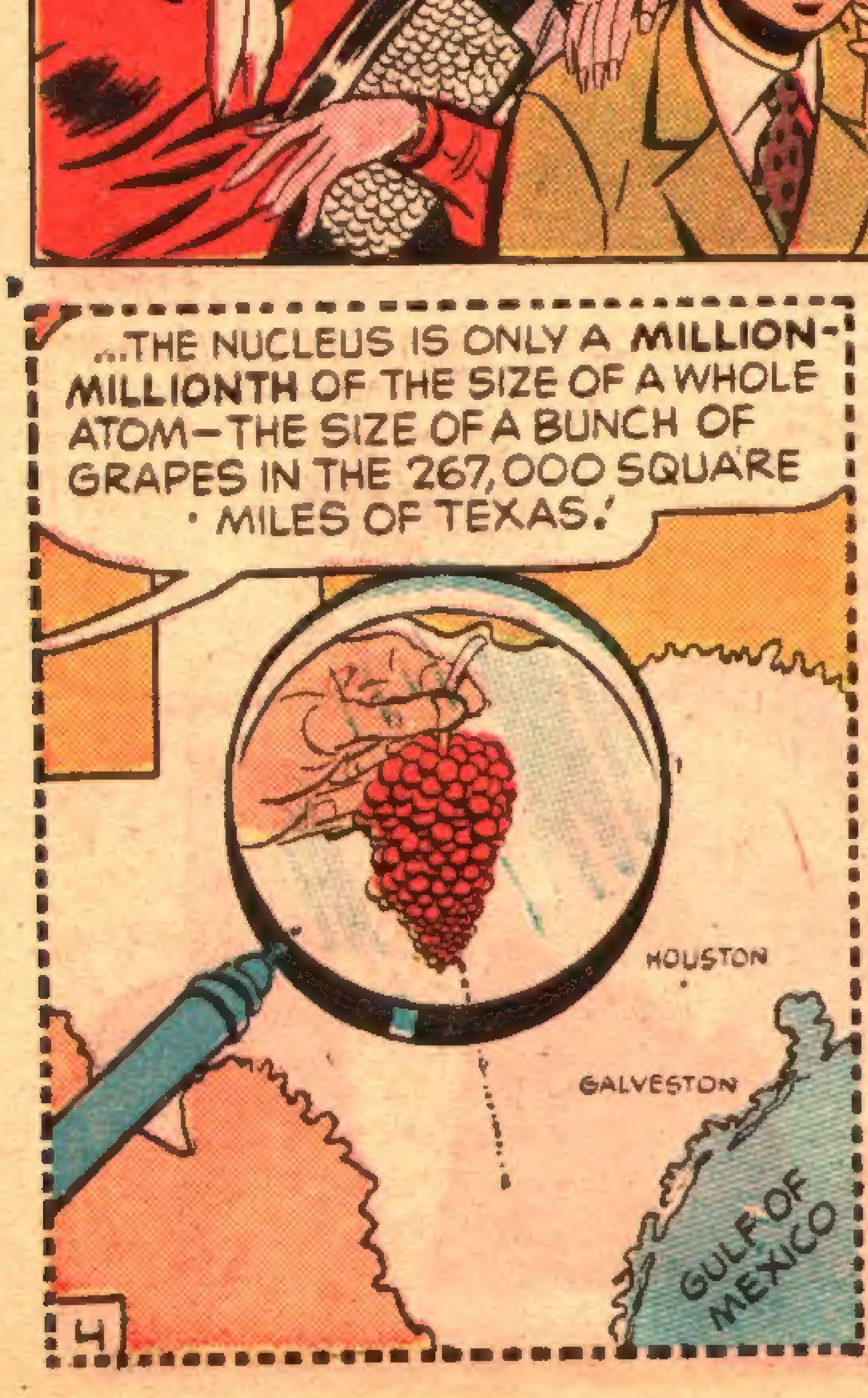
COPR. [illegible]—GENERAL COMICS, INC.

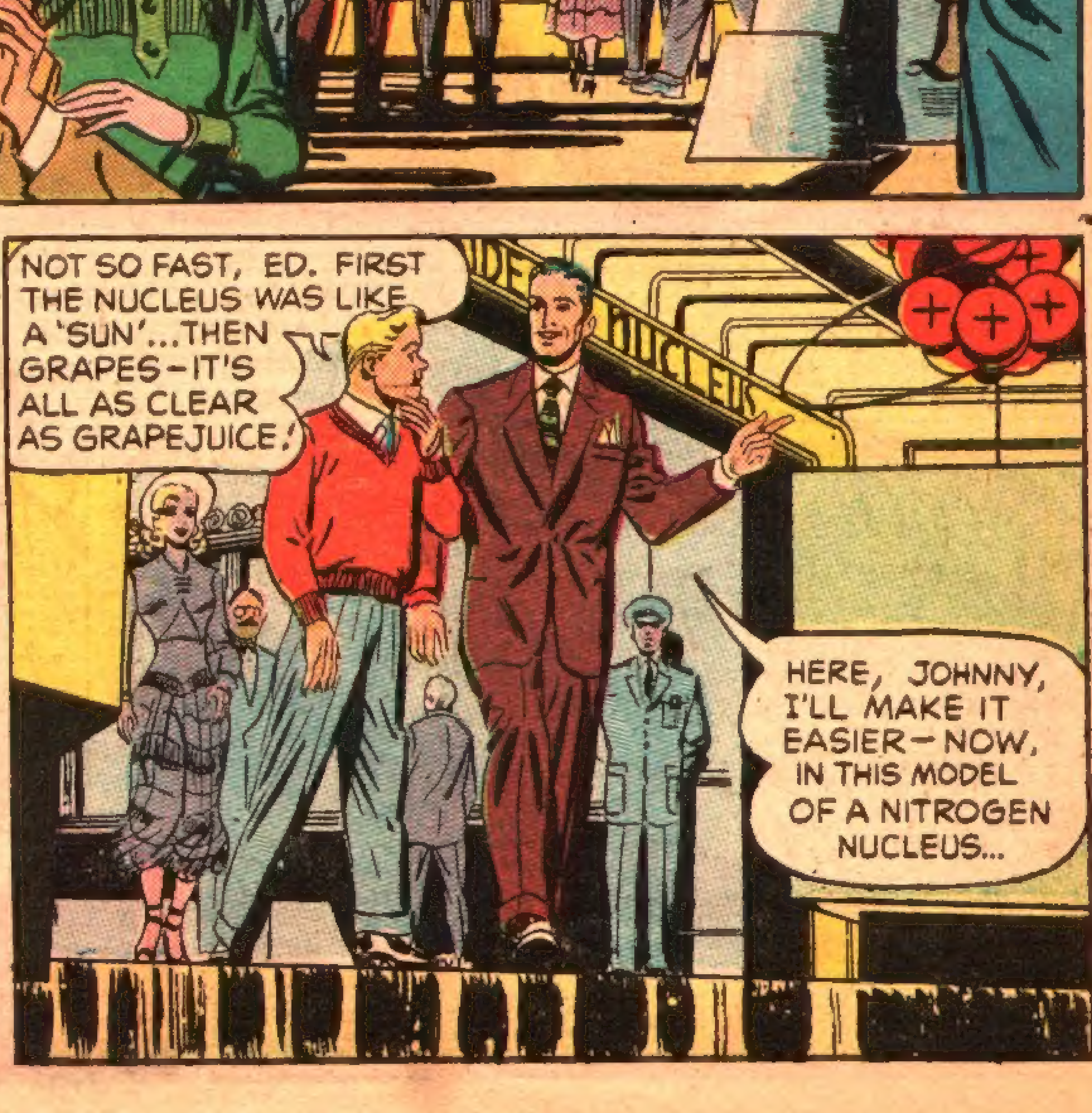
"IN 1808, A QUAKER SCHOOL TEACHER, JOHN DALTON, SUGGESTED..."
WITH ALL OUR KNOWLEDGE OF CHEMISTRY, WE CANNOT CHANGE THE ATOMS OF OTHER **ELEMENTS** INTO GOLD BECAUSE...
GOLD IS ITSELF A BASIC ELEMENT... THE ATOMS OF EACH ELEMENT ARE **DIFFERENT** FROM THE ATOMS OF ALL OTHER ELEMENTS.
"BETWEEN 1850 AND 1900, SCIENTISTS TRIED TO 'EXPLORE' INSIDE THE ATOM..."
PERHAPS THE ATOM, WHICH WE HAVE THOUGHT THE **SMALLEST** POSSIBLE PARTICLE, IS ITSELF **MADE UP OF PARTS**!
...AND THESE PARTS ARE HELD TOGETHER BY **ELECTRICAL ATTRACTION**.
BUT THERE MUST BE **SPACES** BETWEEN THESE PARTS INSIDE THE ATOM!
"AND IN 1913, A DANISH SCIENTIST, NAMED NIELS BOHR, COMBINED THESE THEORIES INTO..."
WHY, DR. BOHR, IT'S LIKE A 'SOLAR SYSTEM' WITHIN EACH TINY ATOM! **ELECTRON** 'PLANETS' WHIRLING AROUND A **NUCLEUS** 'SUN'...
ELECTRONS
NUCLEUS
GOSH, ED, YOU SURE MAKE ALL THAT HISTORY SEEM REAL!
THESE PICTURES AT THIS EXHIBIT HELPED. NOW YOU KNOW WE'VE BEEN WORKING ON THE ATOM FOR A LONG TIME.

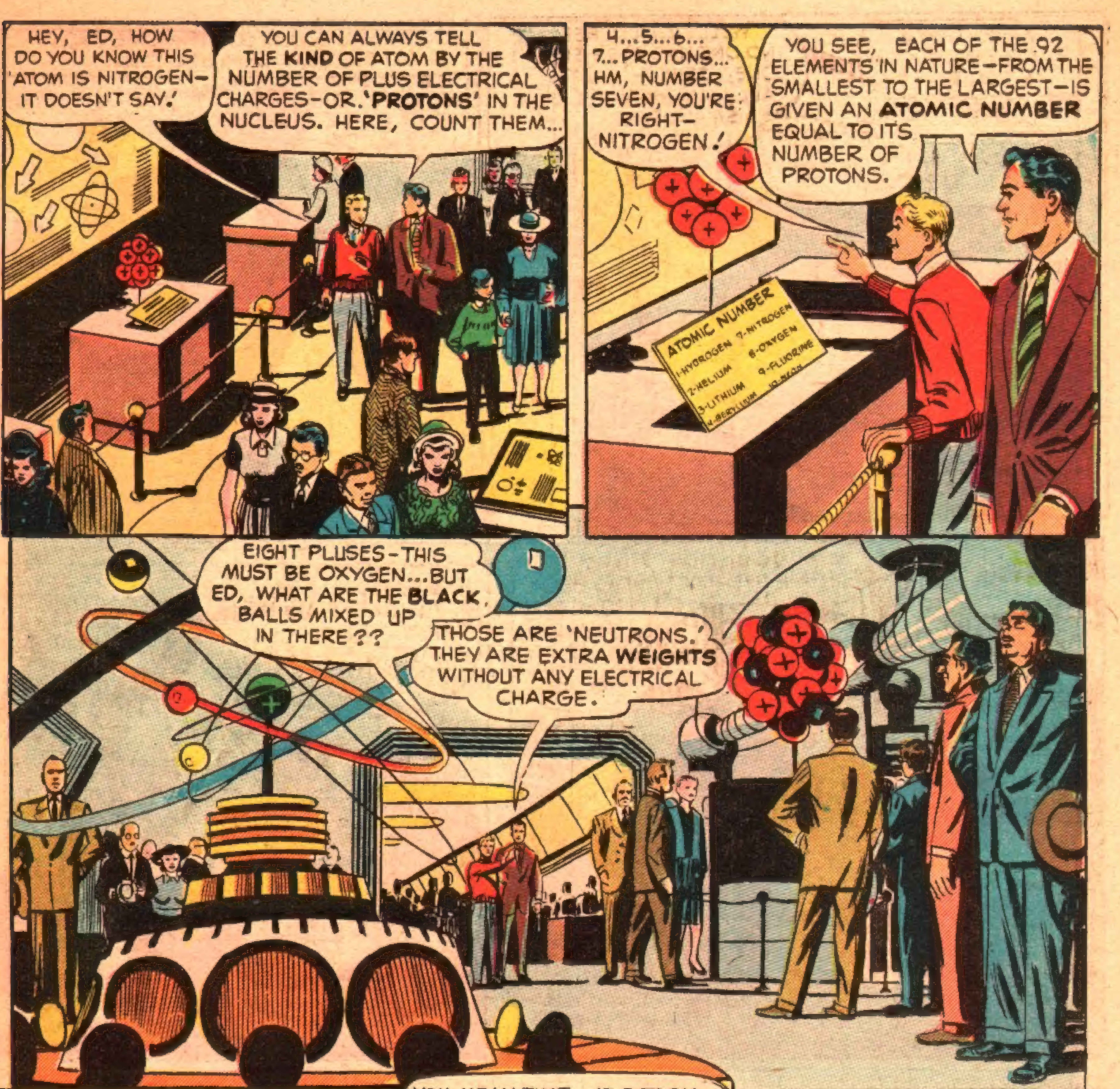

SO **THAT'S** WHAT AN ATOM LOOKS LIKE!
WELL, OF COURSE, NO ONE HAS EVER **SEEN** ONE, JOHNNY... AFTER ALL, AN ATOM IS SO SMALL THAT...


"...IF YOU COULD COUNT ATOMS FROM THE YEAR ONE UNTIL TODAY...
"124...125 ...126."
"36, 678, 112, 599... 36, 678, 112, 600... 36, 678, 11..."
"...YOU WOULDN'T HAVE ENOUGH ATOMS TO COVER THE HEAD OF A PIN!"


WOW...**36 BILLION** ON A PINHEAD!
AND, IF **THAT** MAKES YOUR HEAD SPIN, IMAGINE THE SIZE OF THE **NUCLEUS**...WHERE THE 'POWER OF THE SUN' IS LOCKED...
ATOMIC ENERGY EXHIBITION


...THE NUCLEUS IS ONLY A **MILLION-MILLIONTH** OF THE SIZE OF A WHOLE ATOM—THE SIZE OF A BUNCH OF GRAPES IN THE 267,000 SQUARE MILES OF TEXAS!
HOUSTON
GALVESTON
GULF OF MEXICO

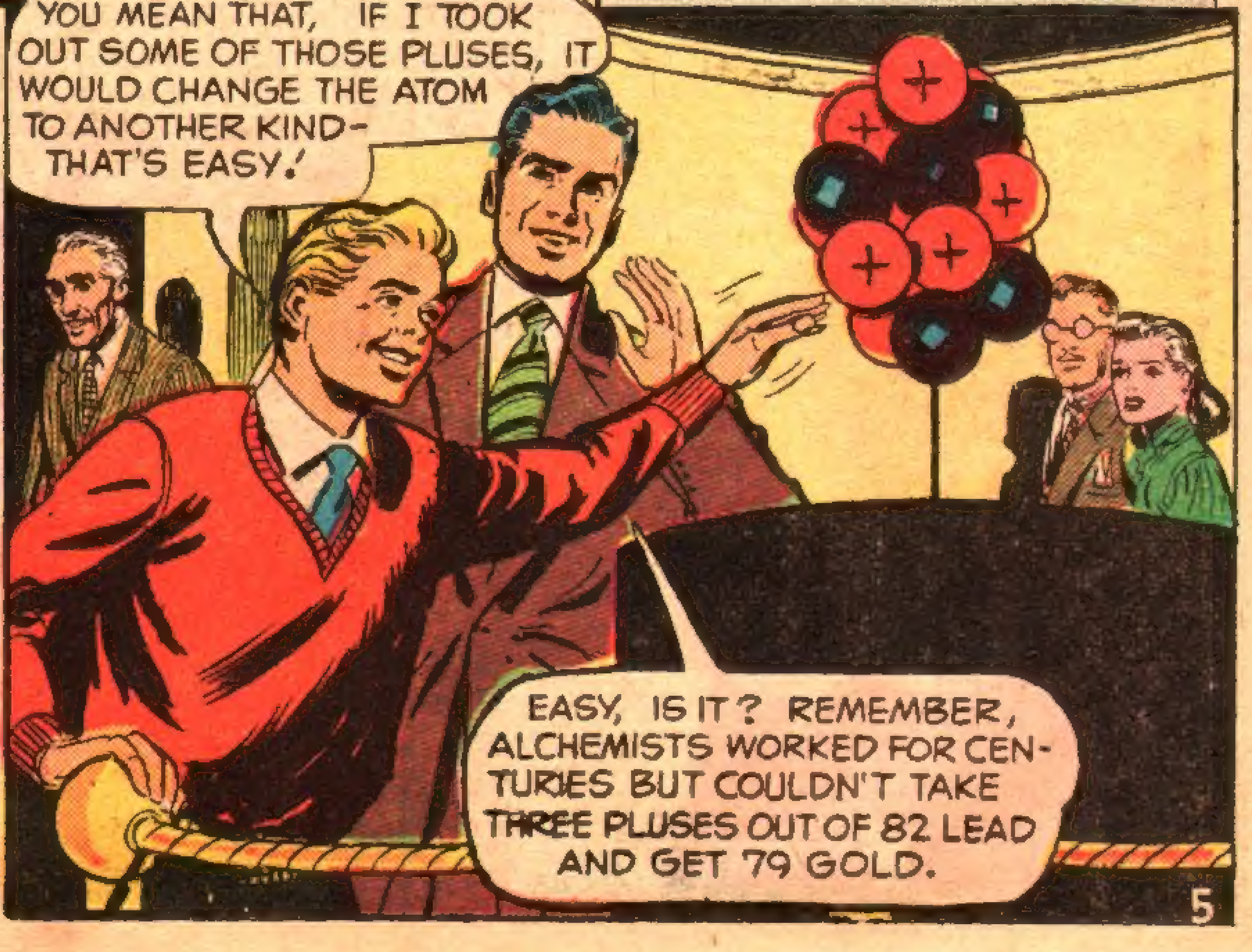

NOT SO FAST, ED. FIRST THE NUCLEUS WAS LIKE A 'SUN'...THEN GRAPES—IT'S ALL AS CLEAR AS GRAPEJUICE!
NUCLEUS
HERE, JOHNNY, I'LL MAKE IT EASIER—NOW, IN THIS MODEL OF A NITROGEN NUCLEUS...


HEY, ED, HOW DO YOU KNOW THIS 'ATOM IS NITROGEN- IT DOESN'T SAY.'
YOU CAN ALWAYS TELL THE **KIND** OF ATOM BY THE NUMBER OF PLUS ELECTRICAL CHARGES-OR.'**PROTONS**' IN THE NUCLEUS. HERE, COUNT THEM...
4...5...6... 7...PROTONS... HM, NUMBER SEVEN, YOU'RE RIGHT- NITROGEN!
YOU SEE, EACH OF THE 92 ELEMENTS IN NATURE-FROM THE SMALLEST TO THE LARGEST-IS GIVEN AN **ATOMIC NUMBER** EQUAL TO ITS NUMBER OF PROTONS.
ATOMIC NUMBER
1-HYDROGEN 7-NITROGEN
2-HELIUM 8-OXYGEN
3-LITHIUM 9-FLUORINE
4-BERYLLIUM 10-NEON
EIGHT PLUSES-THIS MUST BE OXYGEN...BUT ED, WHAT ARE THE **BLACK** BALLS MIXED UP IN THERE??
THOSE ARE 'NEUTRONS.' THEY ARE EXTRA **WEIGHTS** WITHOUT ANY ELECTRICAL CHARGE.

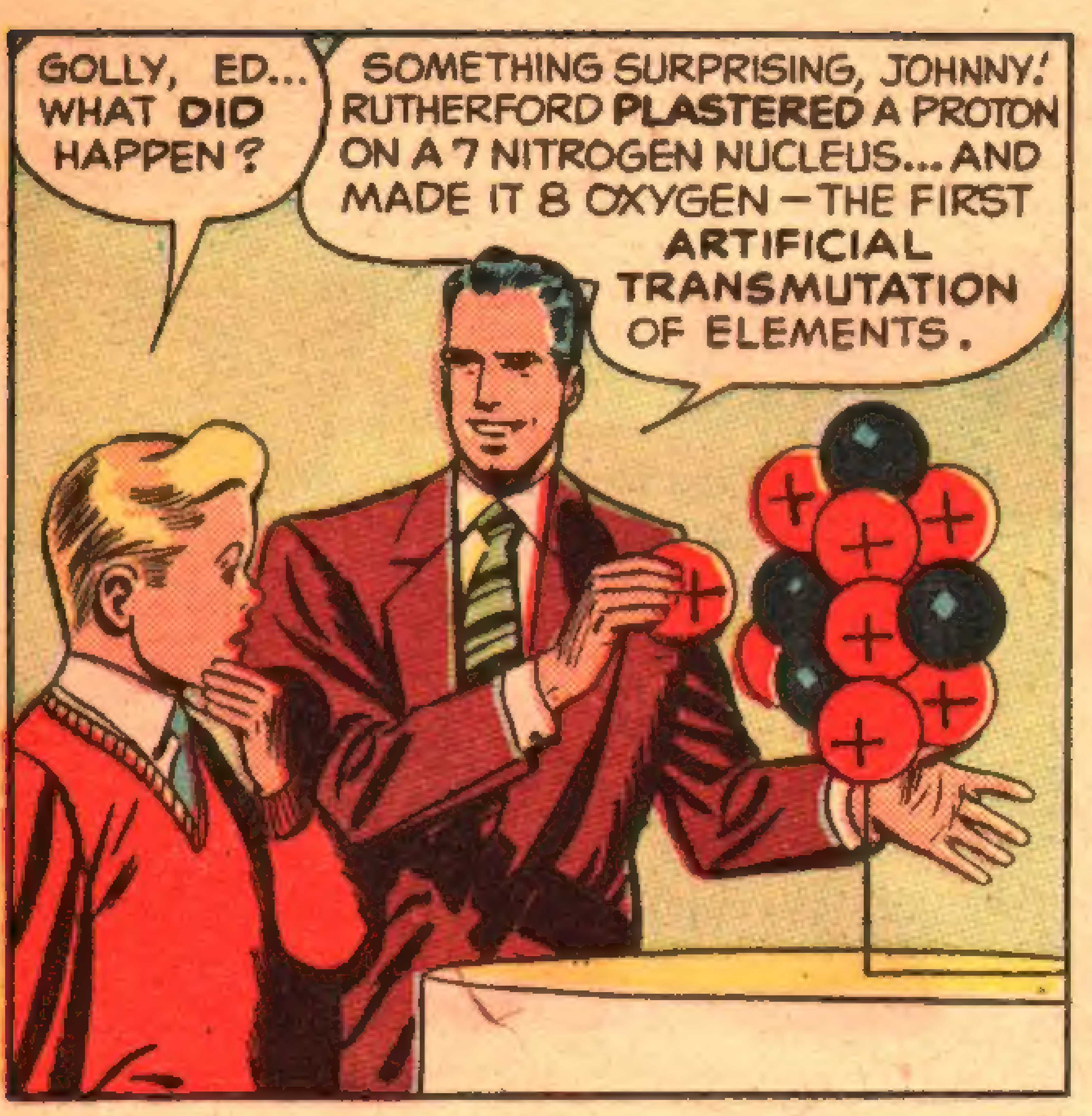
"SEE... AN '**ATOM'S NUMBER** IS THE NUMBER OF PROTONS, AND AN '**ATOM'S WEIGHT**' IS THE NUMBER OF PROTONS **AND** NEUTRONS."

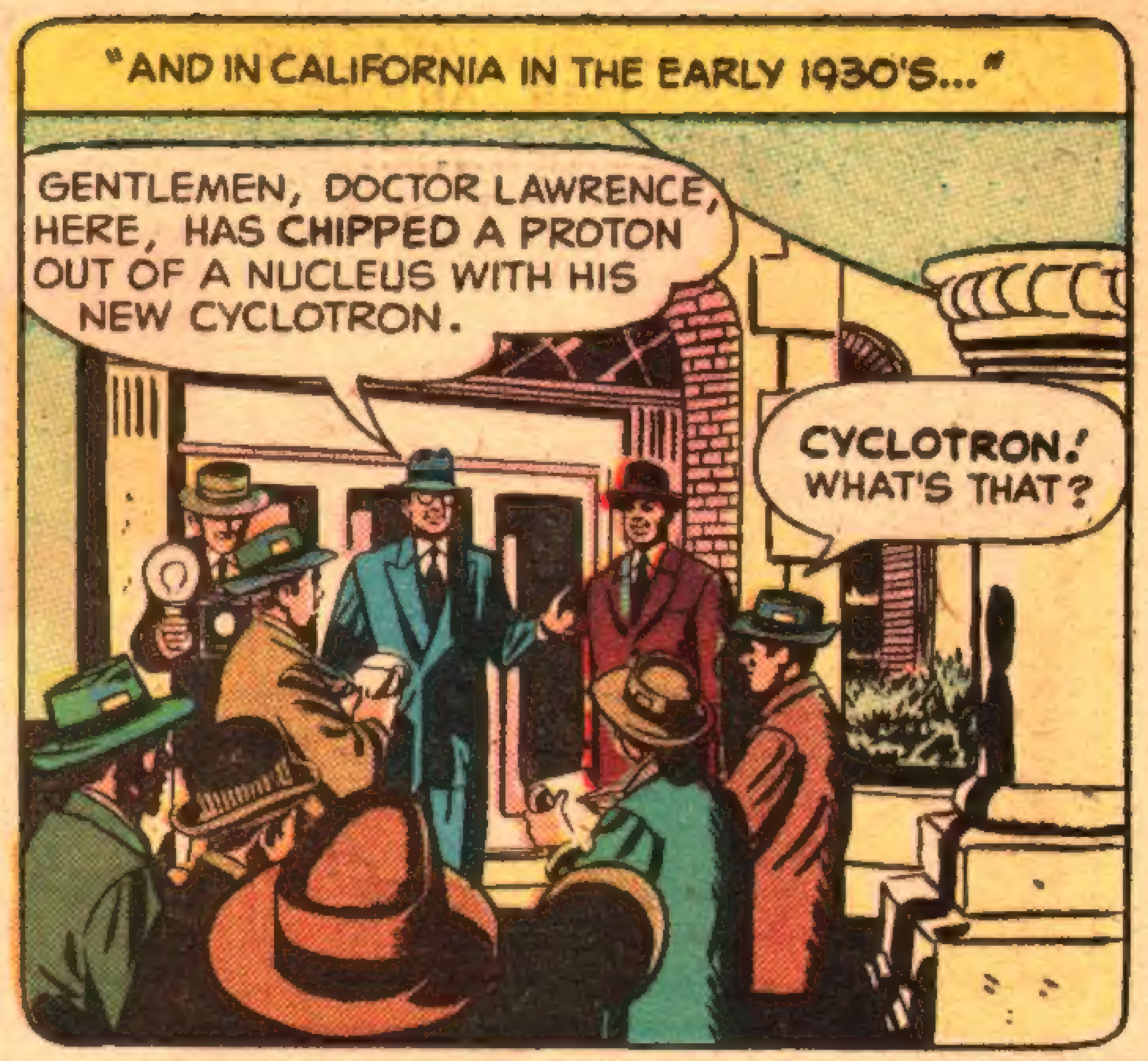
TYPICAL ATOMS

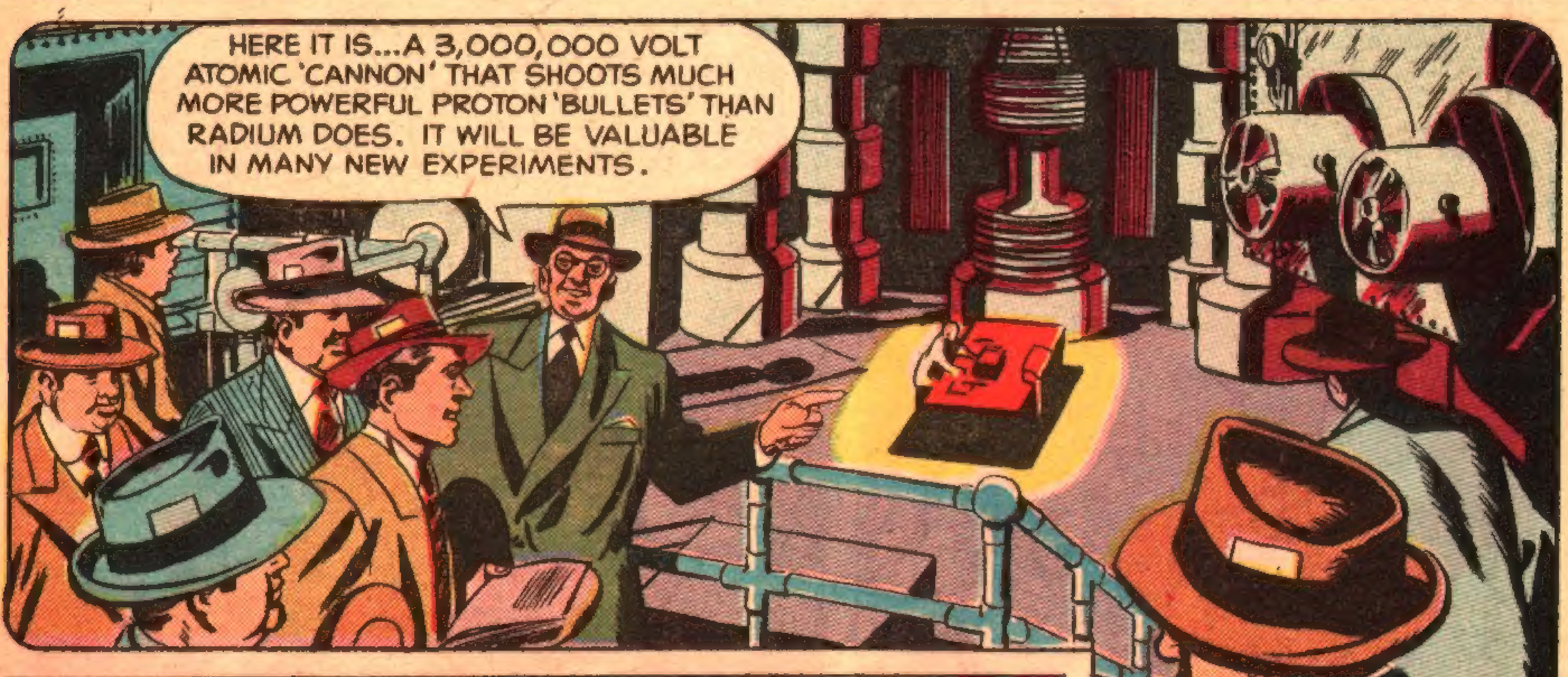
NO.	ELEMENT	PROTONS	NEUTRONS	WT.
8	OXYGEN	8	8	16
26	IRON	26	30	56
79	GOLD	79	118	197
92	URANIUM	92	146	238

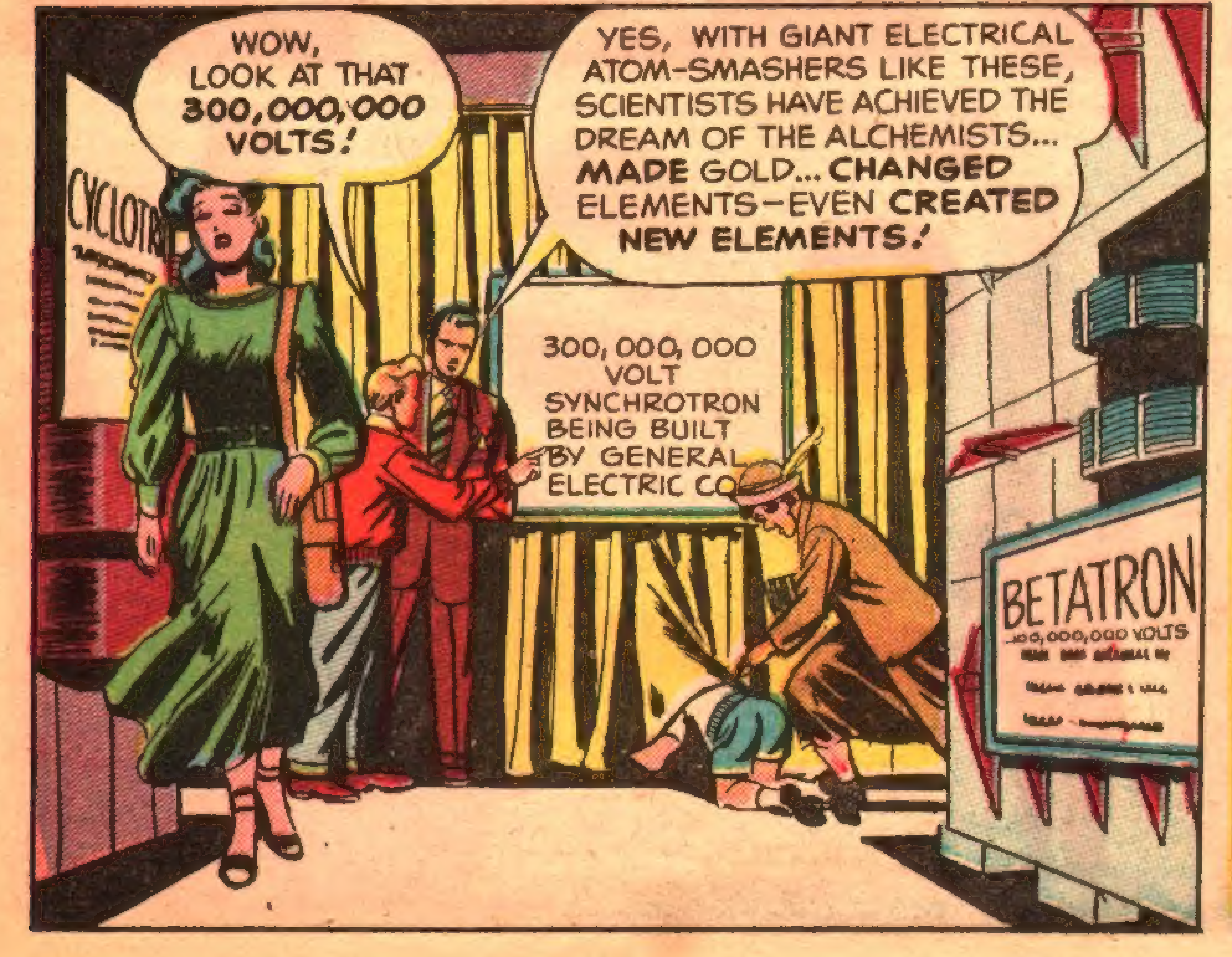

YOU MEAN THAT, IF I TOOK OUT SOME OF THOSE PLUSES, IT WOULD CHANGE THE ATOM TO ANOTHER KIND- THAT'S EASY!
EASY, IS IT? REMEMBER, ALCHEMISTS WORKED FOR CENTURIES BUT COULDN'T TAKE THREE PLUSES OUT OF 82 LEAD AND GET 79 GOLD.

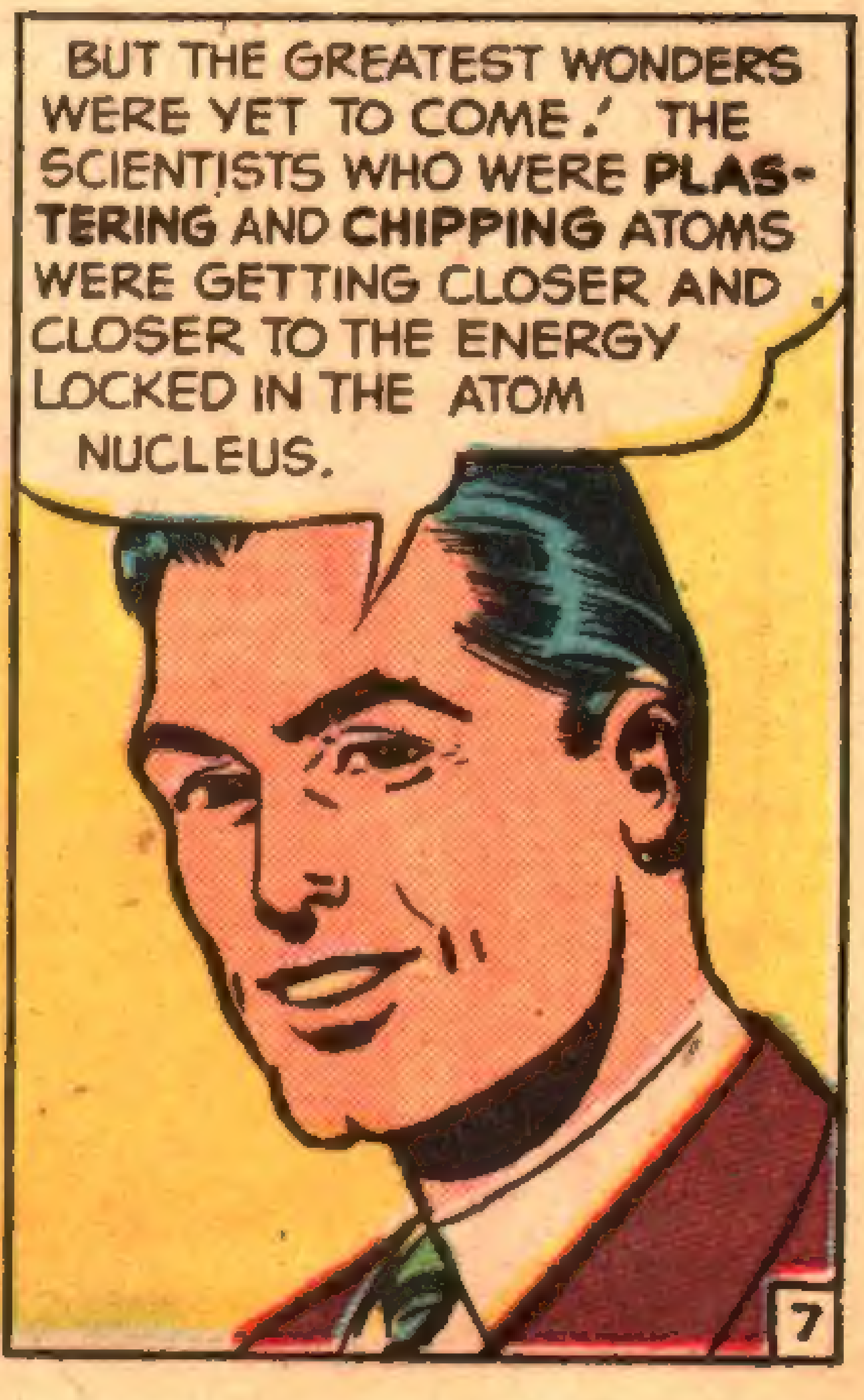
"BUT, STRANGELY ENOUGH, SOME ELEMENTS CHANGE BY THEMSELVES... ANTOINE HENRI BECQUEREL FOUND ONE IN 1896..."
MADAME CURIE, I CAN'T UNDERSTAND IT...THIS URANIUM ORE GIVES OFF SOME STRANGE KIND OF 'RAY'!
PLEASE, PROFESSOR LET ME EXPERIMENT WITH IT.
BETWEEN THE TWO OF THEM, THEY DISCOVERED THAT CERTAIN ELEMENTS ARE 'RADIOACTIVE'...THAT IS THEY SHOOT OFF SOME OF THEIR PROTONS. HERE, I'LL SHOW YOU.
SPARKLERS
I GET IT- IT'S SHOOTING OFF PLUS CHARGES!
EXACTLY! LET'S SUPPOSE THIS SPARKLER IS RADIOACTIVE, OR 'HOT,' URANIUM. YOU SEE 92 URANIUM LOSES PLUS CHARGES UNTIL IT BECOMES 88 RADIUM AND...
OH-OH... THE SPARKLER STOPPED BURNING.
YES...AND, AFTER CENTURIES, RADIOACTIVE ELEMENTS 'BURN OUT' TOO. EACH 88 RADIUM NUCLEUS LOSES PLUS CHARGES UNTIL IT FINALLY HAS BECOME 82 LEAD, A STABLE, OR 'COLD,' ELEMENT.
THIS WHOLE PROCESS IS CALLED 'NATURAL TRANSMUTATION'!...WHY IT HAPPENS AND WHY IT STOPS, NO ONE KNOWS... BUT IT'S AN IMPORTANT PART OF OUR STORY. YOU SEE...
92
1
88
2
82
3
"AN ENGLISH SCIENTIST, SIR ERNEST RUTHERFORD, FOUND AN IMPORTANT USE FOR RADIOACTIVE ELEMENTS IN 1919..."
YOU MEAN SIR ERNEST, THAT YOU CAN USE THE PARTICLES COMING FROM THE RADIUM?
YES...THEY ARE MY 'BULLETS' WHICH I USE TO BOMBARD OTHER ATOMS. YOU NEVER CAN TELL WHAT WILL HAPPEN NEXT!


GOLLY, ED... WHAT **DID** HAPPEN?
SOMETHING SURPRISING, JOHNNY! RUTHERFORD **PLASTERED** A PROTON ON A 7 NITROGEN NUCLEUS... AND MADE IT 8 OXYGEN — THE FIRST **ARTIFICIAL TRANSMUTATION** OF ELEMENTS.


"AND IN CALIFORNIA IN THE EARLY 1930'S..."
GENTLEMEN, DOCTOR LAWRENCE, HERE, HAS **CHIPPED** A PROTON OUT OF A NUCLEUS WITH HIS NEW CYCLOTRON.
CYCLOTRON! WHAT'S THAT?

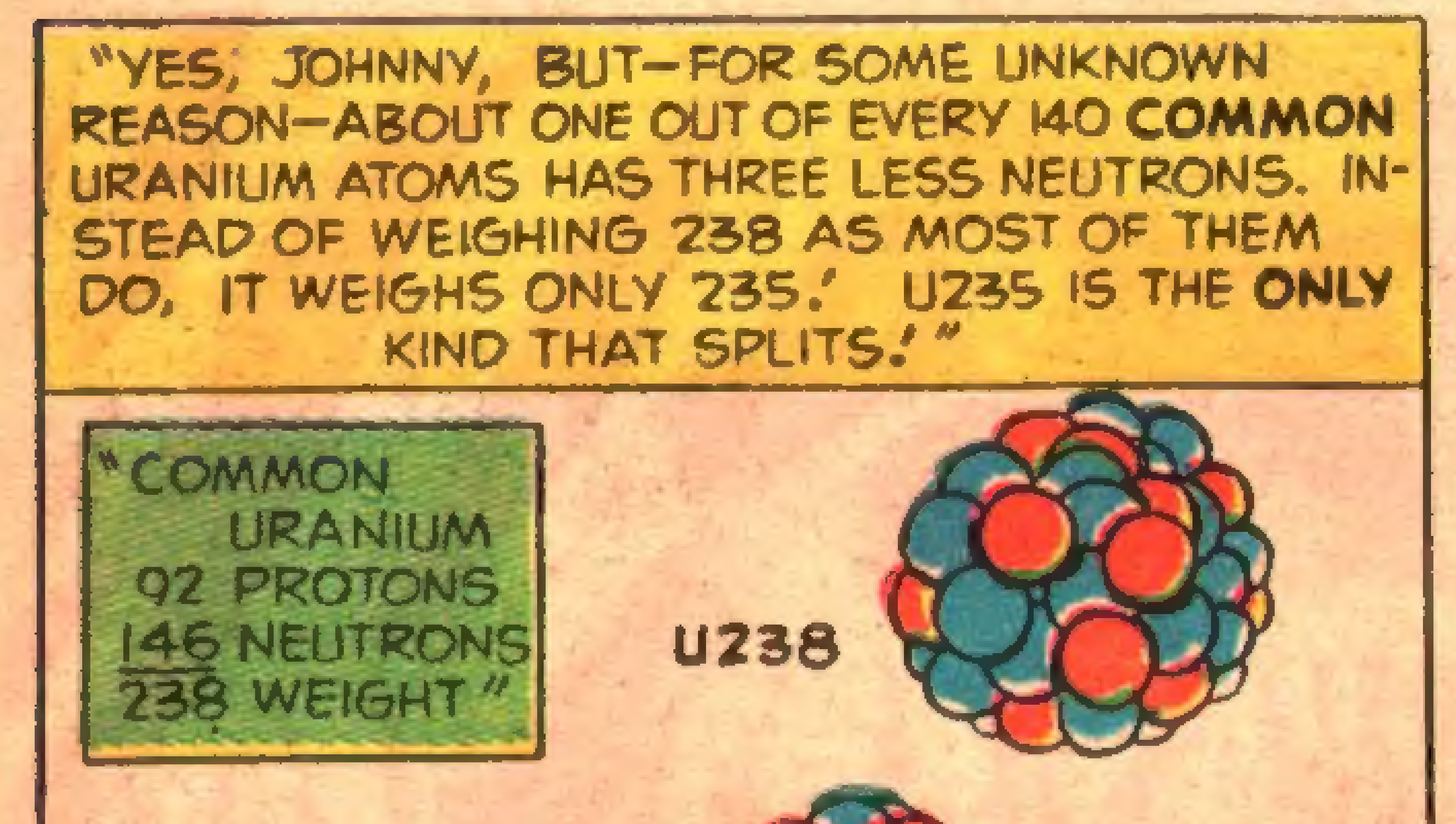

HERE IT IS...A 3,000,000 VOLT ATOMIC 'CANNON' THAT SHOOTS MUCH MORE POWERFUL PROTON 'BULLETS' THAN RADIUM DOES. IT WILL BE VALUABLE IN MANY NEW EXPERIMENTS.

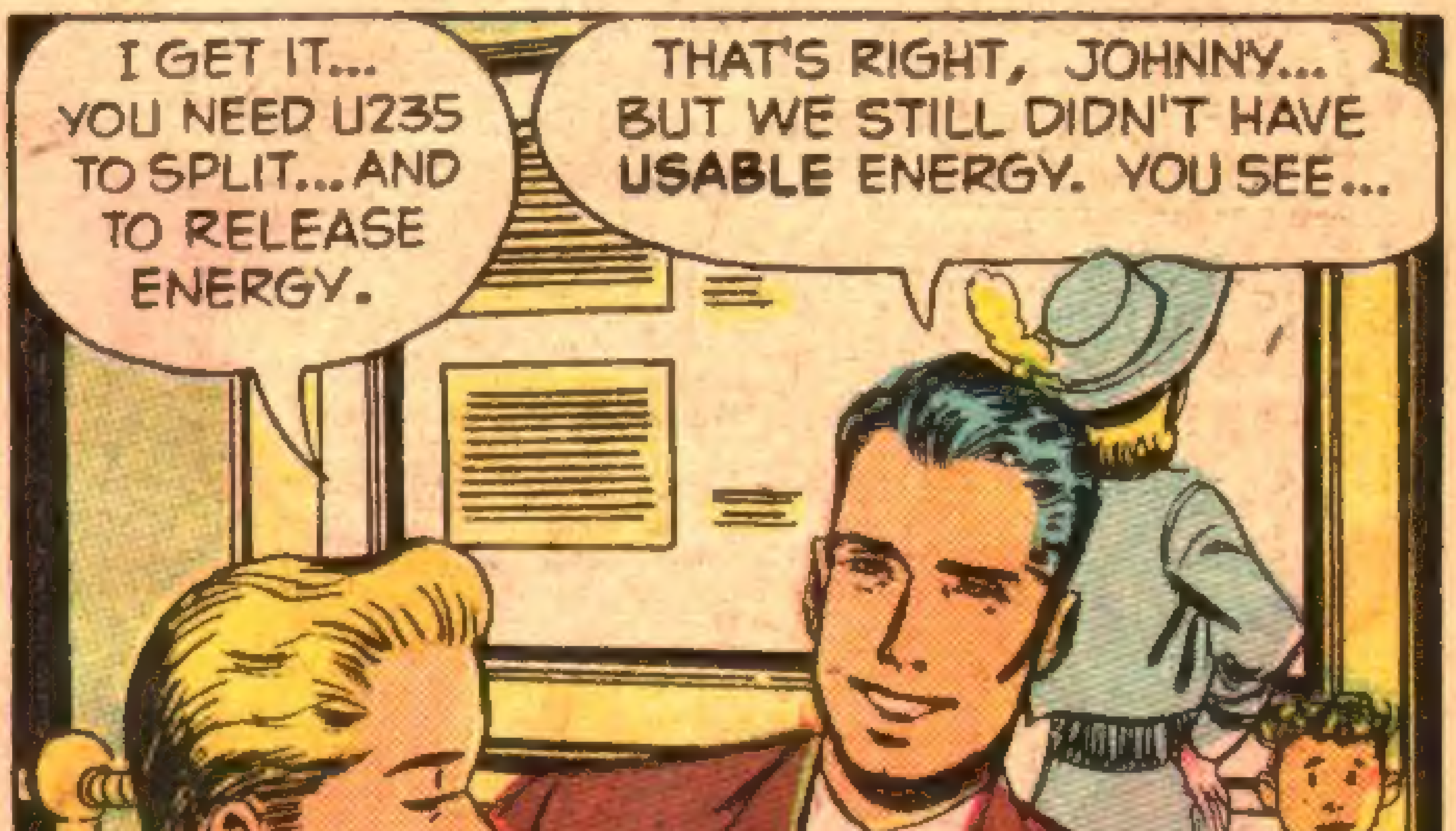

WOW, LOOK AT THAT **300,000,000 VOLTS!**
YES, WITH GIANT ELECTRICAL ATOM-SMASHERS LIKE THESE, SCIENTISTS HAVE ACHIEVED THE DREAM OF THE ALCHEMISTS... **MADE** GOLD... **CHANGED** ELEMENTS — EVEN **CREATED NEW ELEMENTS!**
CYCLOTR
300,000,000 VOLT SYNCHROTRON BEING BUILT BY GENERAL ELECTRIC CO
BETATRON
100,000,000 VOLTS

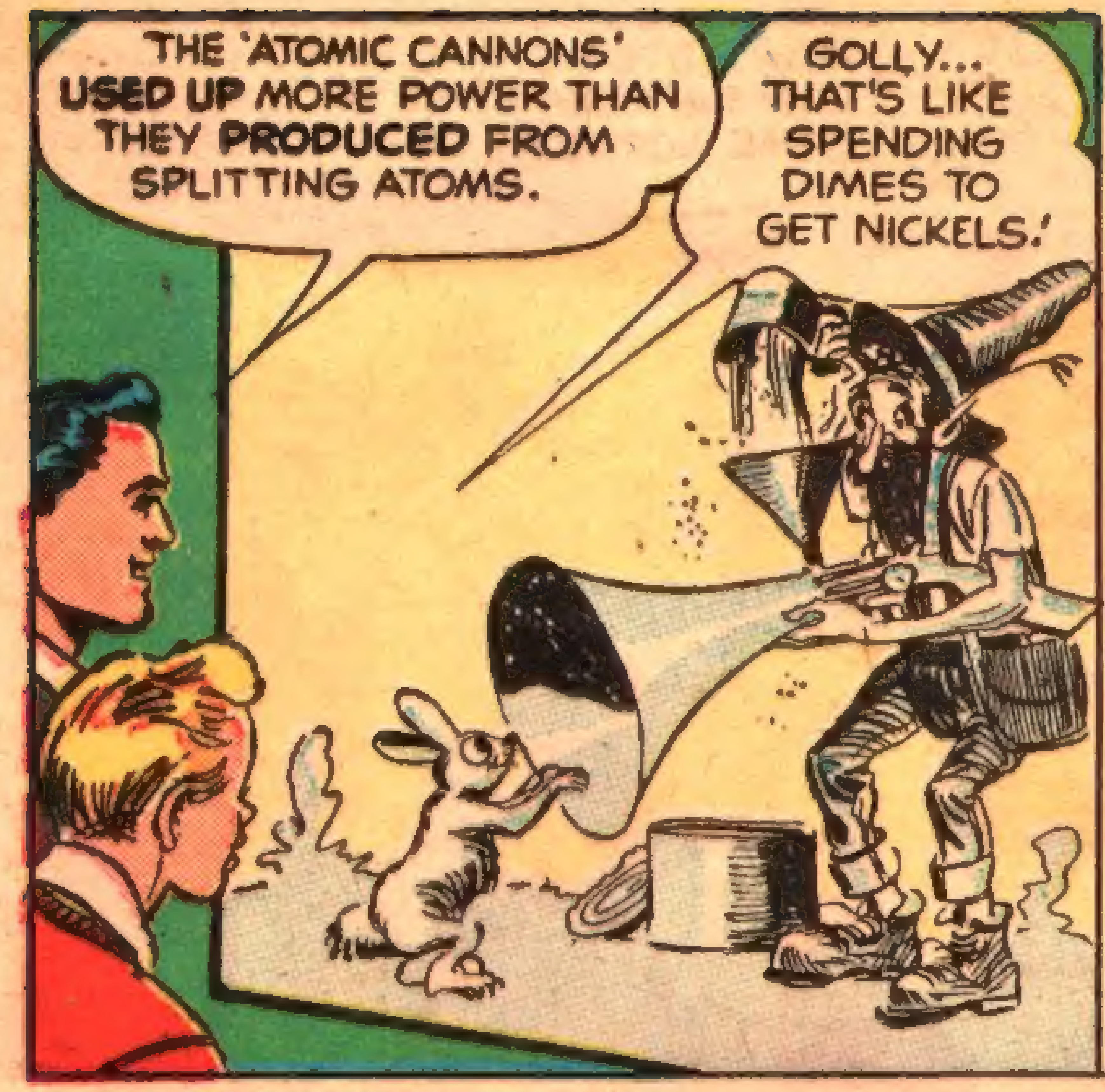

BUT THE GREATEST WONDERS WERE YET TO COME! THE SCIENTISTS WHO WERE **PLASTERING** AND **CHIPPING** ATOMS WERE GETTING CLOSER AND CLOSER TO THE ENERGY LOCKED IN THE ATOM NUCLEUS.

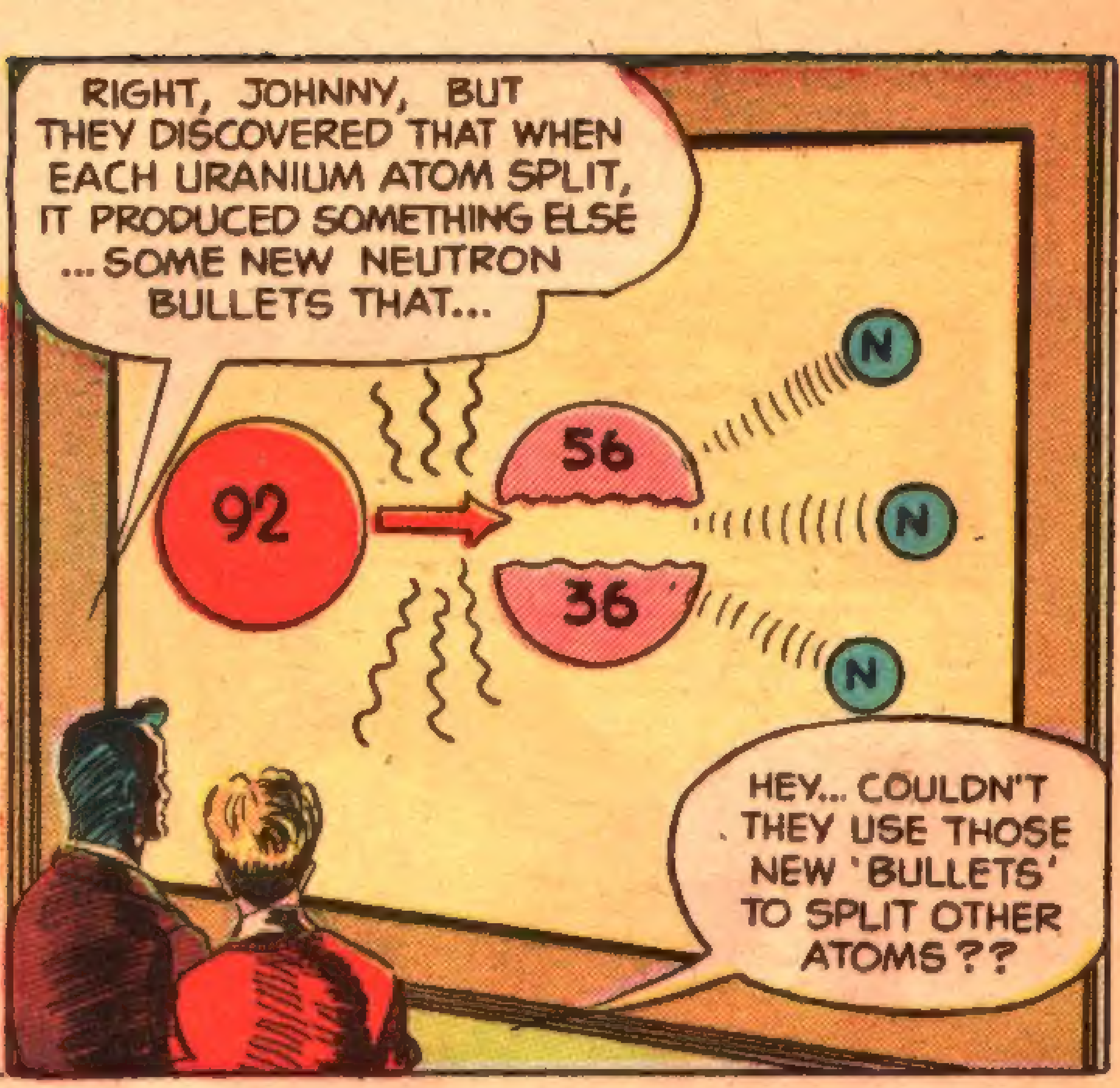
MEN HAVE ALWAYS USED ENERGY THAT CAME INDIRECTLY FROM THE SUN... BUT IN 1905 ALBERT EINSTEIN SAW, IN EVERY SPECK OF DUST HERE ON EARTH, A POSSIBLE SOURCE OF THAT SAME ENERGY...
'IF MATTER COULD BE **DESTROYED** ENERGY WOULD BE **CREATED** IN ITS PLACE'...WHAT NONSENSE ...ALBERT WRITES!
WHY NONSENSE? ISN'T THAT WHAT HAPPENS WHEN I BURN THIS MATCH?
OF COURSE NOT! THAT'S ONLY A **CHEMICAL** REACTION. ACCORDING TO THIS FORMULA OF EINSTEIN'S... 'ENERGY EQUALS MASS TIMES THE SPEED OF LIGHT SQUARED'.....
..DESTROYING COMPLETELY THE ATOMS OF THIS MATCHSTICK WOULD MELT ALL THE SNOW IN SWITZERLAND!
"BUT, LUCKILY, SOME SCIENTISTS DID NOT LAUGH AND, FOR 33 YEARS, THEY TRIED TO DESTROY MATTER AND RELEASE ENERGY. IN 1938, WHILE OTTO HAHN AND FRITZ STRASSMAN WERE TRYING TO PLASTER PROTONS ON THE NUCLEUS OF 92 URANIUM..."
WELL, DOCTOR, WE FAILED AGAIN. AND HOW DID THIS 56 BARIUM GET IN WITH THE URANIUM?
STRANGE, HERR STRASSMAN, VERY STRANGE...I WISH DR. MEITNER WERE STILL HERE WORKING WITH US.
"AND, IN DENMARK, WHEN DR. MEITNER HEARD OF THE EXPERIMENTS..."
NO WONDER DR. MEITNER IS SO EXCITED! SHE THINKS, PERHAPS, THE URANIUM ACTUALLY **'FISSIONED'**, OR SPLIT IN TWO!
DR NIELS BOHR
WEIGHS 238
ENERGY
WEIGHS 137
ENERGY
WEIGHS 83
BUT THE BARIUM AND KRYPTON LEFT BY THE SPLIT WEIGH LESS THAN THE ORIGINAL URANIUM. COULD THAT MEAN...?

"WORKING ON LISE MEITNER'S CLUE, NIELS BOHR ORGANIZED FURTHER EXPERIMENTS BEFORE LEAVING FOR AMERICA AND, SOON AFTER, AT GEORGE WASHINGTON UNIVERSITY..."
DR. BOHR HAS JUST HEARD THAT THERE IS NOW PROOF THAT THE SPLITTING URANIUM **DESTROYED MASS**, AND...
ENERGY MUST HAVE BEEN RELEASED! WE MUST CHECK FURTHER!
EINSTEIN WAS RIGHT! COME...LET'S TRY IT IN OUR OWN LAB!
IN THE MANY EXPERIMENTS THAT FOLLOWED, SCIENTISTS IN AMERICA DISCOVERED THAT, STRANGELY ENOUGH, ONLY A CERTAIN **KIND** OF URANIUM SPLIT.
KIND OF URANIUM? DIDN'T YOU TELL ME ALL URANIUM WAS THE SAME —WITH 92 PROTONS?
ISOTOPES

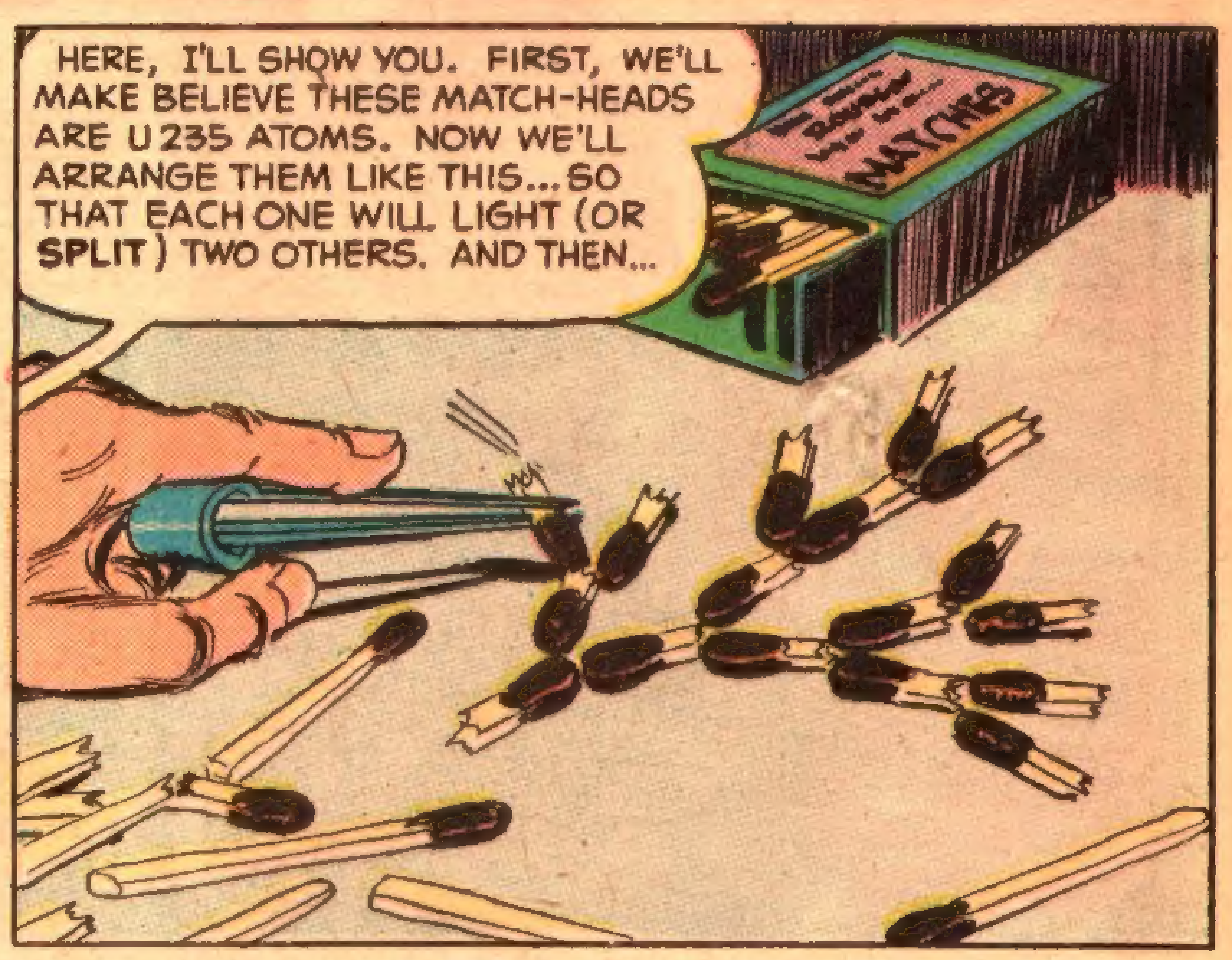

"YES, JOHNNY, BUT—FOR SOME UNKNOWN REASON—ABOUT ONE OUT OF EVERY 140 **COMMON** URANIUM ATOMS HAS THREE LESS NEUTRONS. INSTEAD OF WEIGHING 238 AS MOST OF THEM DO, IT WEIGHS ONLY 235! U235 IS THE **ONLY** KIND THAT SPLITS!"
"COMMON URANIUM 92 PROTONS 146 NEUTRONS 238 WEIGHT"
U238
"RARE URANIUM ATOM 92 PROTONS 143 NEUTRONS 235 WEIGHT"
U235


I GET IT... YOU NEED U235 TO SPLIT...AND TO RELEASE ENERGY.
THAT'S RIGHT, JOHNNY... BUT WE STILL DIDN'T HAVE **USABLE** ENERGY. YOU SEE...
R

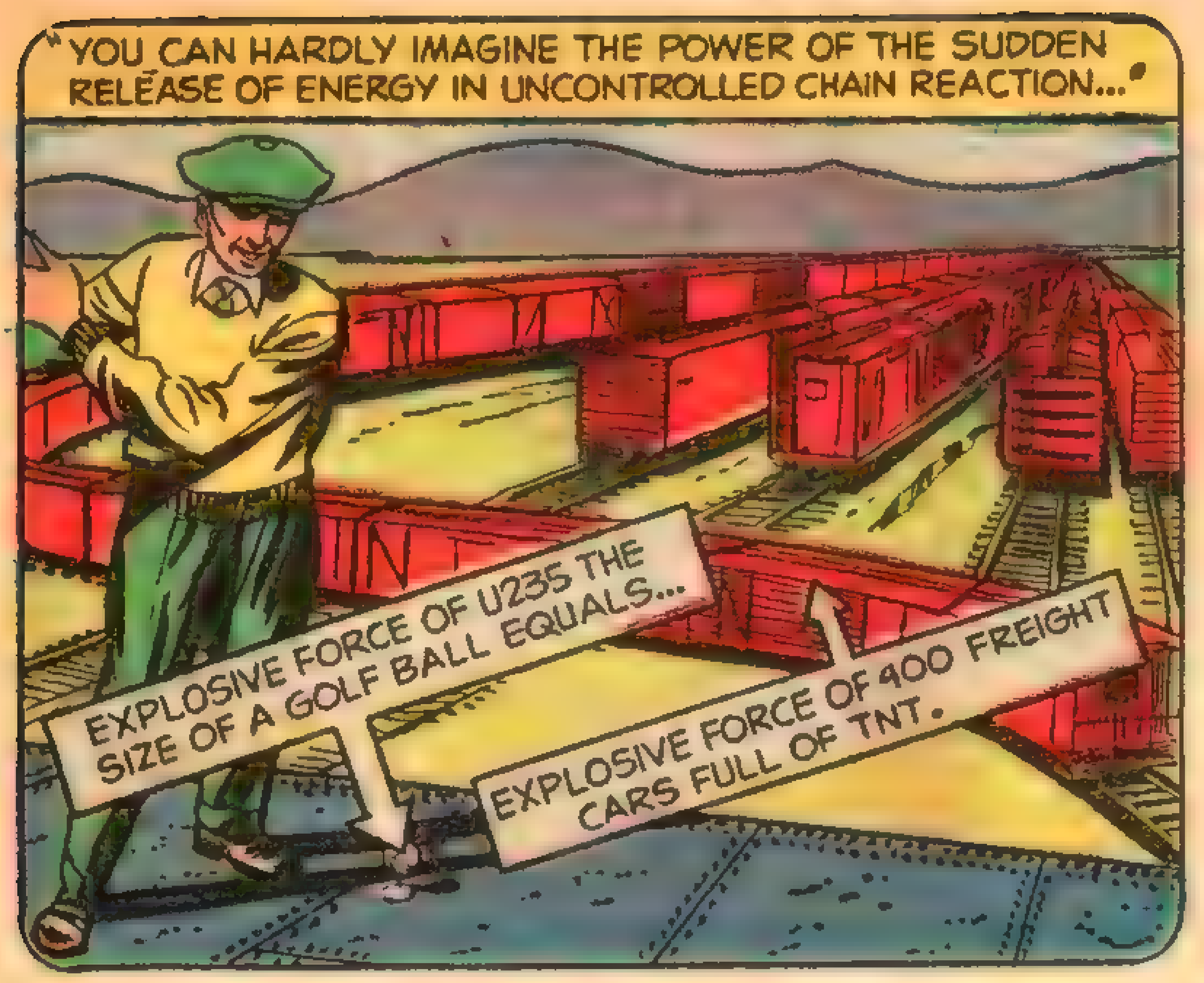

THE 'ATOMIC CANNONS' **USED UP** MORE POWER THAN THEY **PRODUCED** FROM SPLITTING ATOMS.
GOLLY... THAT'S LIKE SPENDING DIMES TO GET NICKELS!

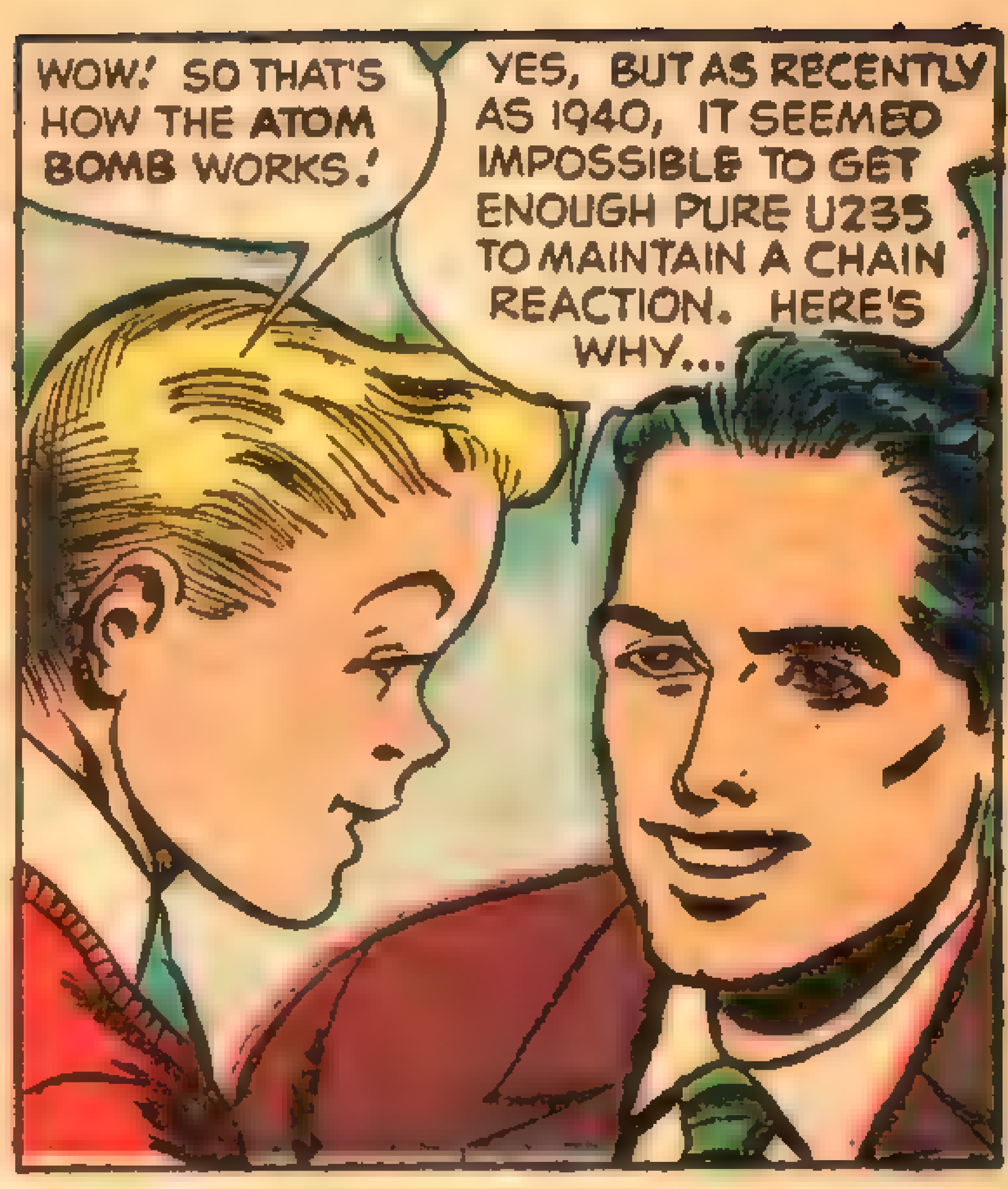

RIGHT, JOHNNY, BUT THEY DISCOVERED THAT WHEN EACH URANIUM ATOM SPLIT, IT PRODUCED SOMETHING ELSE ...SOME NEW NEUTRON BULLETS THAT...
92
56
36
N
N
N
HEY... COULDN'T THEY USE THOSE NEW 'BULLETS' TO SPLIT OTHER ATOMS??

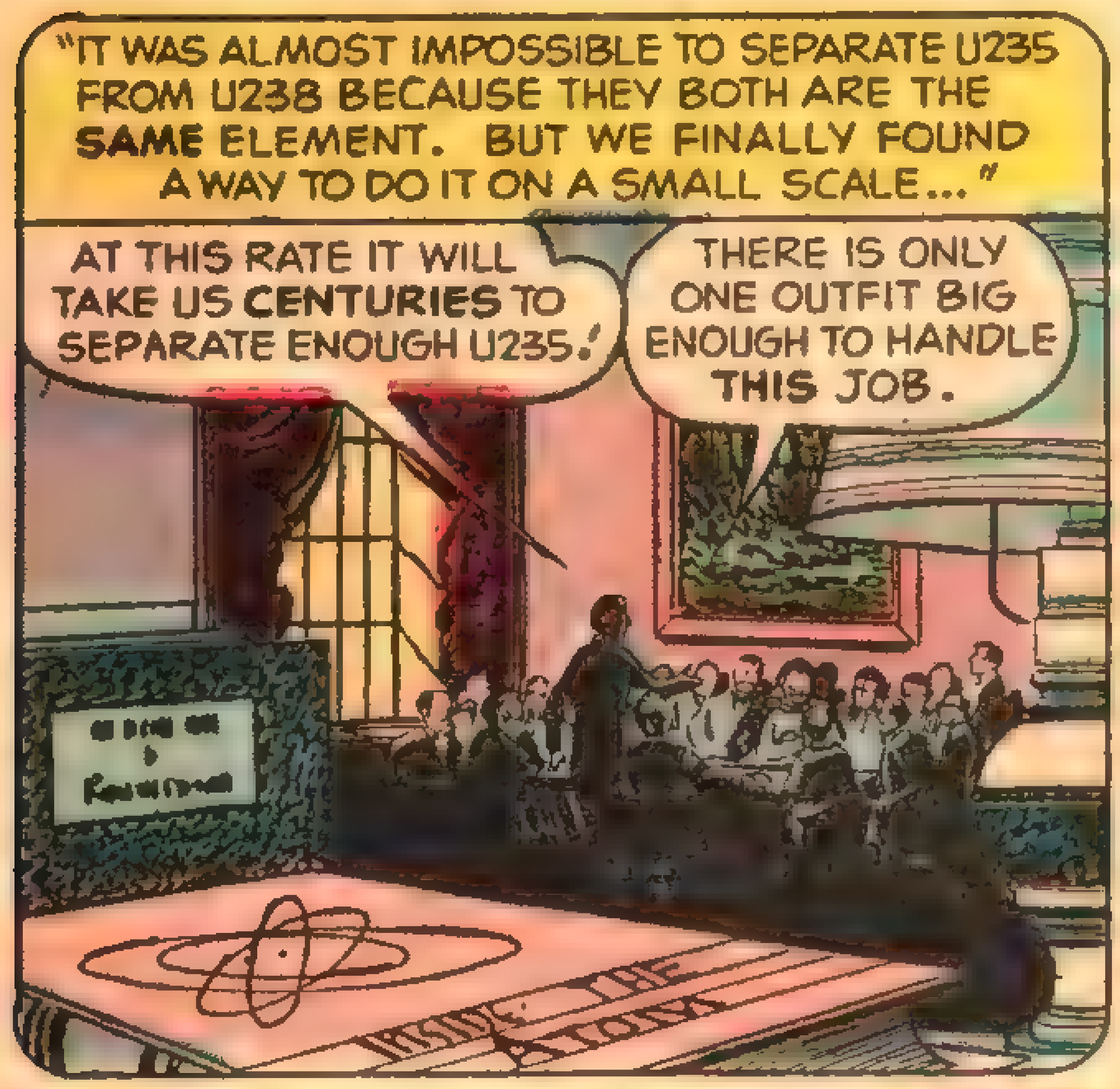
SMART BOY, JOHNNY. NOW THEY DIDN'T NEED THOSE 'CANNONS' AT ALL! THEY COULD SET UP A **'CHAIN REACTION'!**
CHAIN REACTION? WHAT'S THAT?

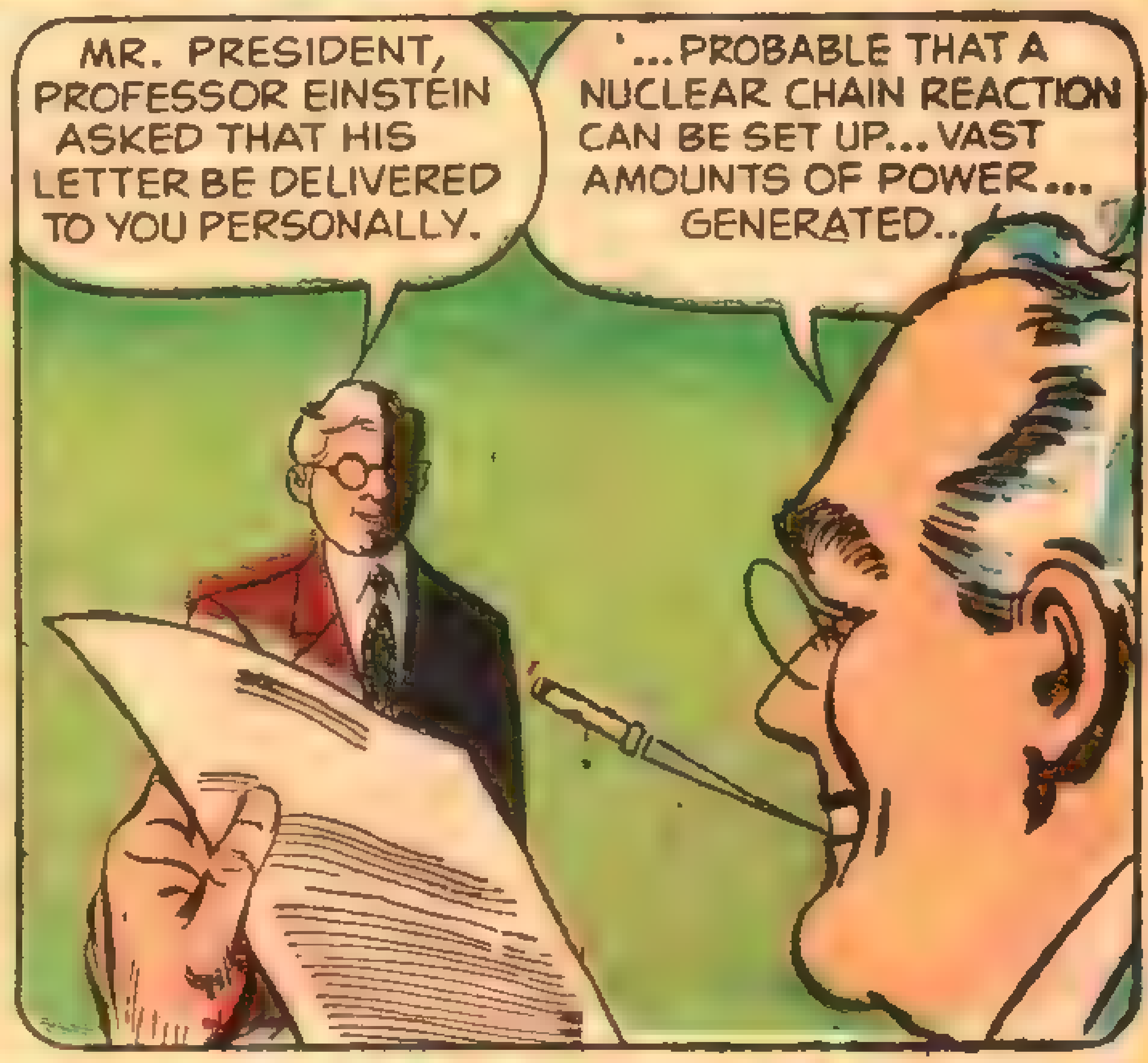

HERE, I'LL SHOW YOU. FIRST, WE'LL MAKE BELIEVE THESE MATCH-HEADS ARE U 235 ATOMS. NOW WE'LL ARRANGE THEM LIKE THIS... SO THAT EACH ONE WILL LIGHT (OR **SPLIT**) TWO OTHERS. AND THEN...
MATCHES

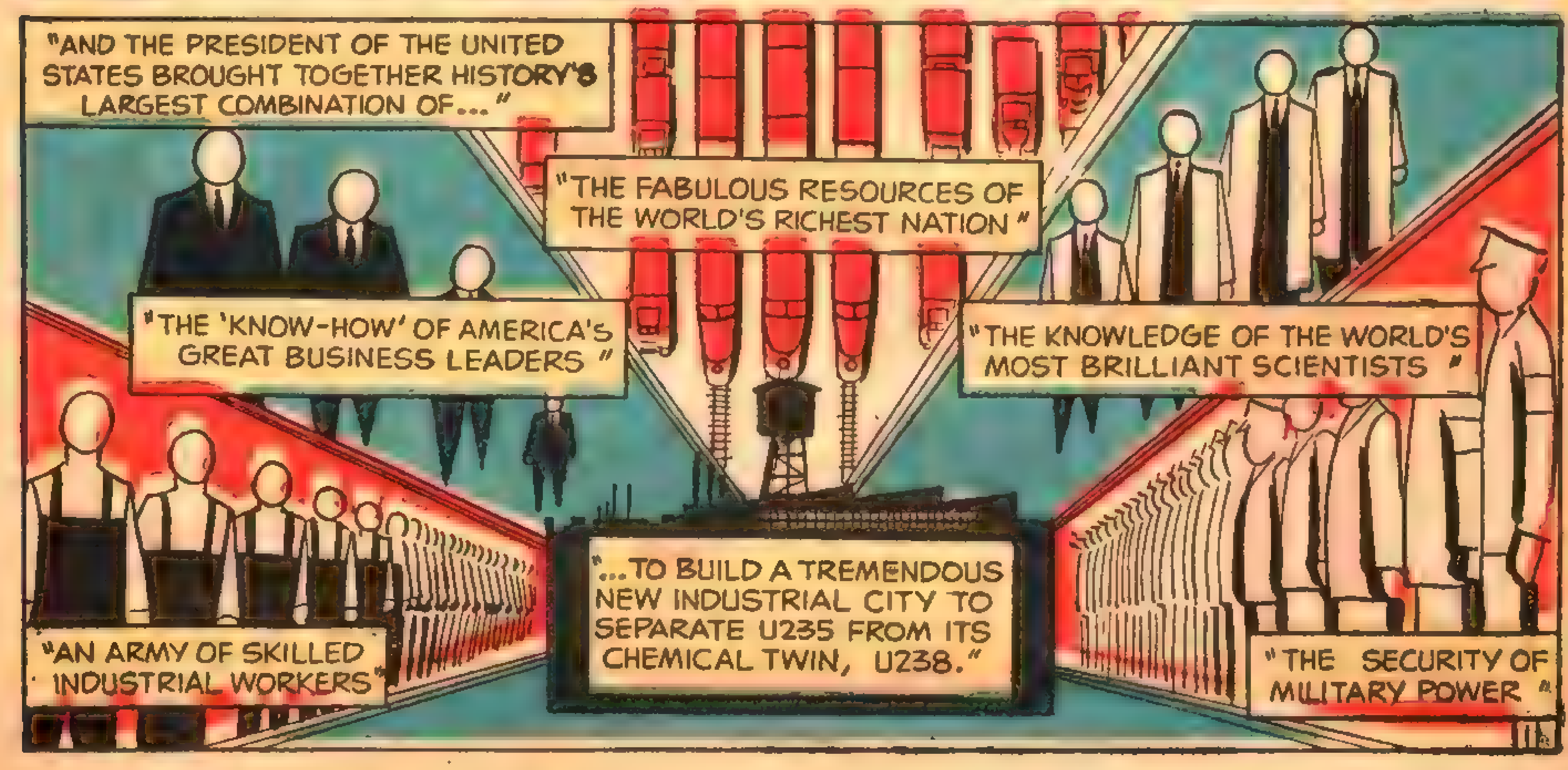
WHEN THE FIRST MATCH STARTS A 'CHAIN REACTION'... LOOK!—
WITH U235 ATOMS—AFTER ONE SECOND, TWO MILLION SPLIT... 1/1000 SECOND LATER, 40 BILLION SPLIT... BEFORE YOU CAN BAT AN EYE, 900 **TRILLION** ...AND FASTER, FASTER, **FASTER...**

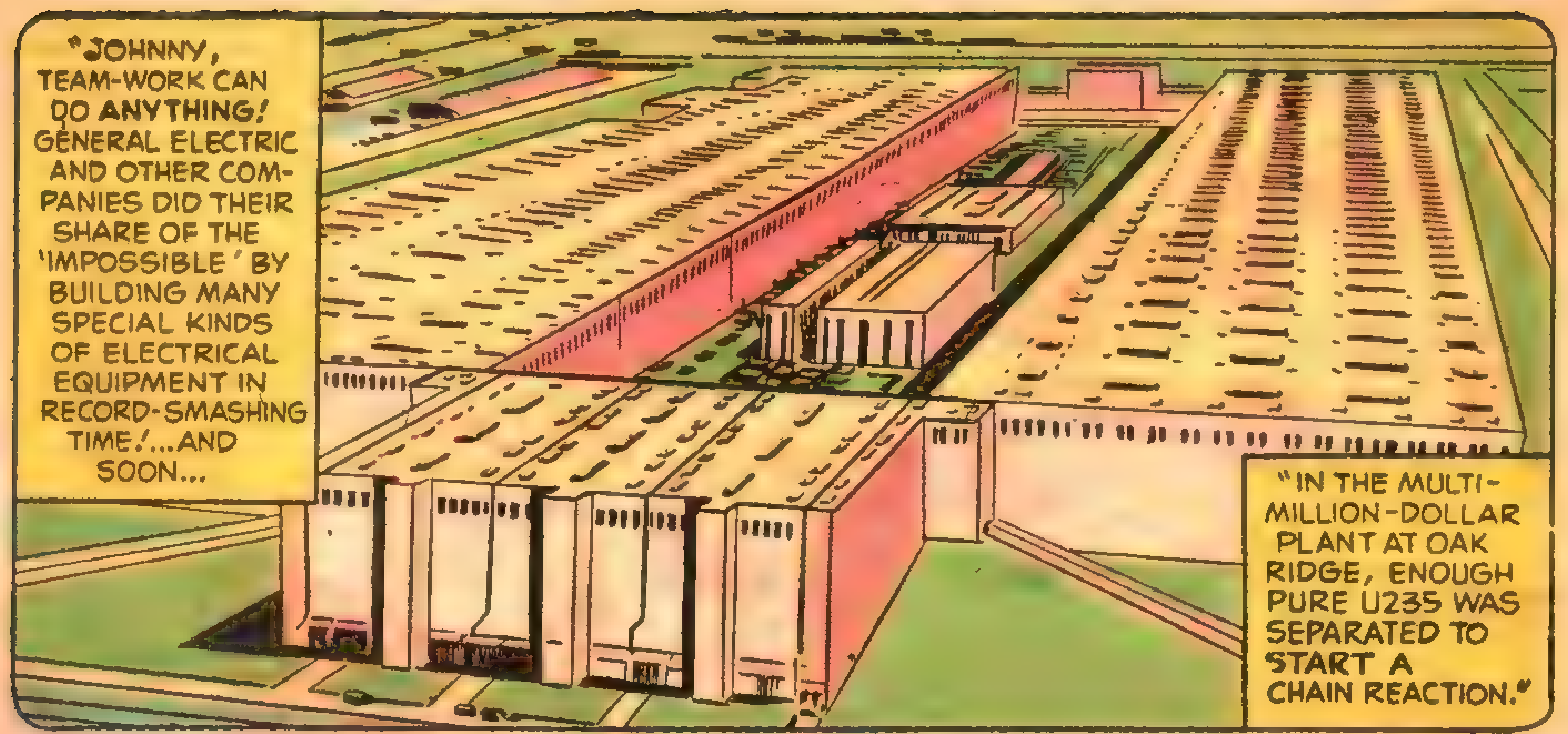

"YOU CAN HARDLY IMAGINE THE POWER OF THE SUDDEN RELEASE OF ENERGY IN UNCONTROLLED CHAIN REACTION..."
EXPLOSIVE FORCE OF U235 THE SIZE OF A GOLF BALL EQUALS...
EXPLOSIVE FORCE OF 400 FREIGHT CARS FULL OF TNT.

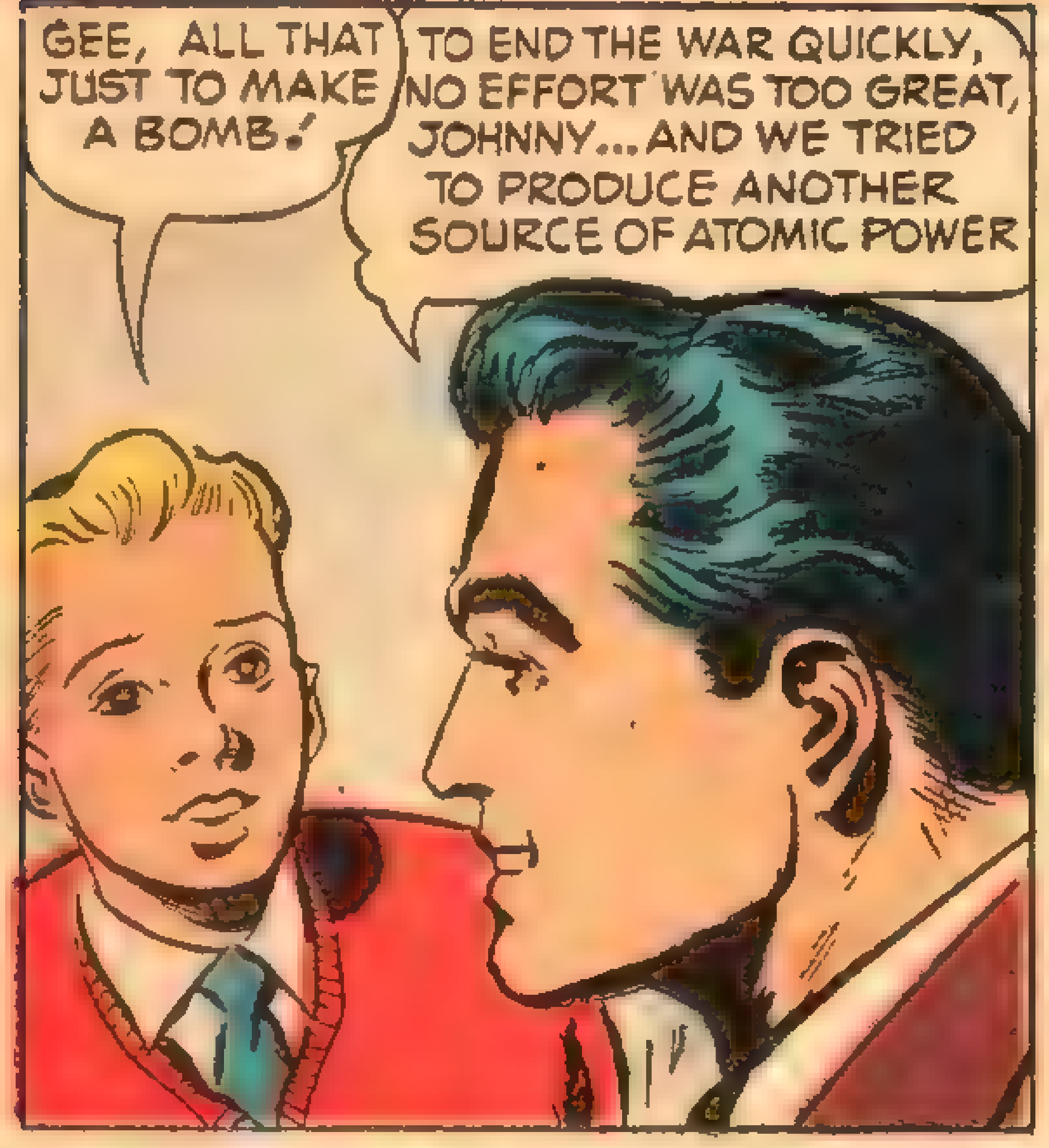

WOW! SO THAT'S HOW THE ATOM BOMB WORKS!
YES, BUT AS RECENTLY AS 1940, IT SEEMED IMPOSSIBLE TO GET ENOUGH PURE U235 TO MAINTAIN A CHAIN REACTION. HERE'S WHY...

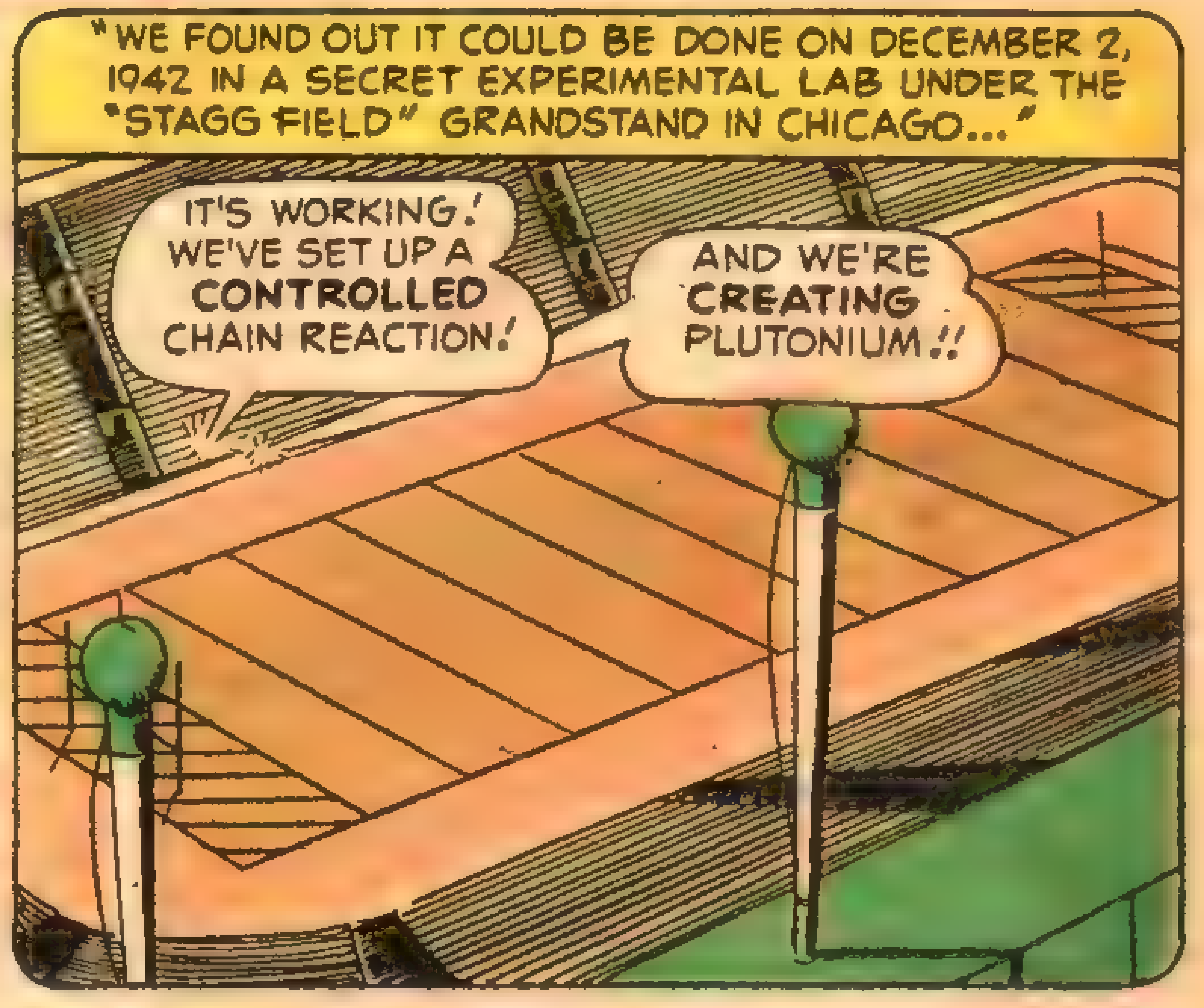

"IT WAS ALMOST IMPOSSIBLE TO SEPARATE U235 FROM U238 BECAUSE THEY BOTH ARE THE SAME ELEMENT. BUT WE FINALLY FOUND A WAY TO DO IT ON A SMALL SCALE..."
AT THIS RATE IT WILL TAKE US CENTURIES TO SEPARATE ENOUGH U235!
THERE IS ONLY ONE OUTFIT BIG ENOUGH TO HANDLE THIS JOB.
INSIDE THE ATOM

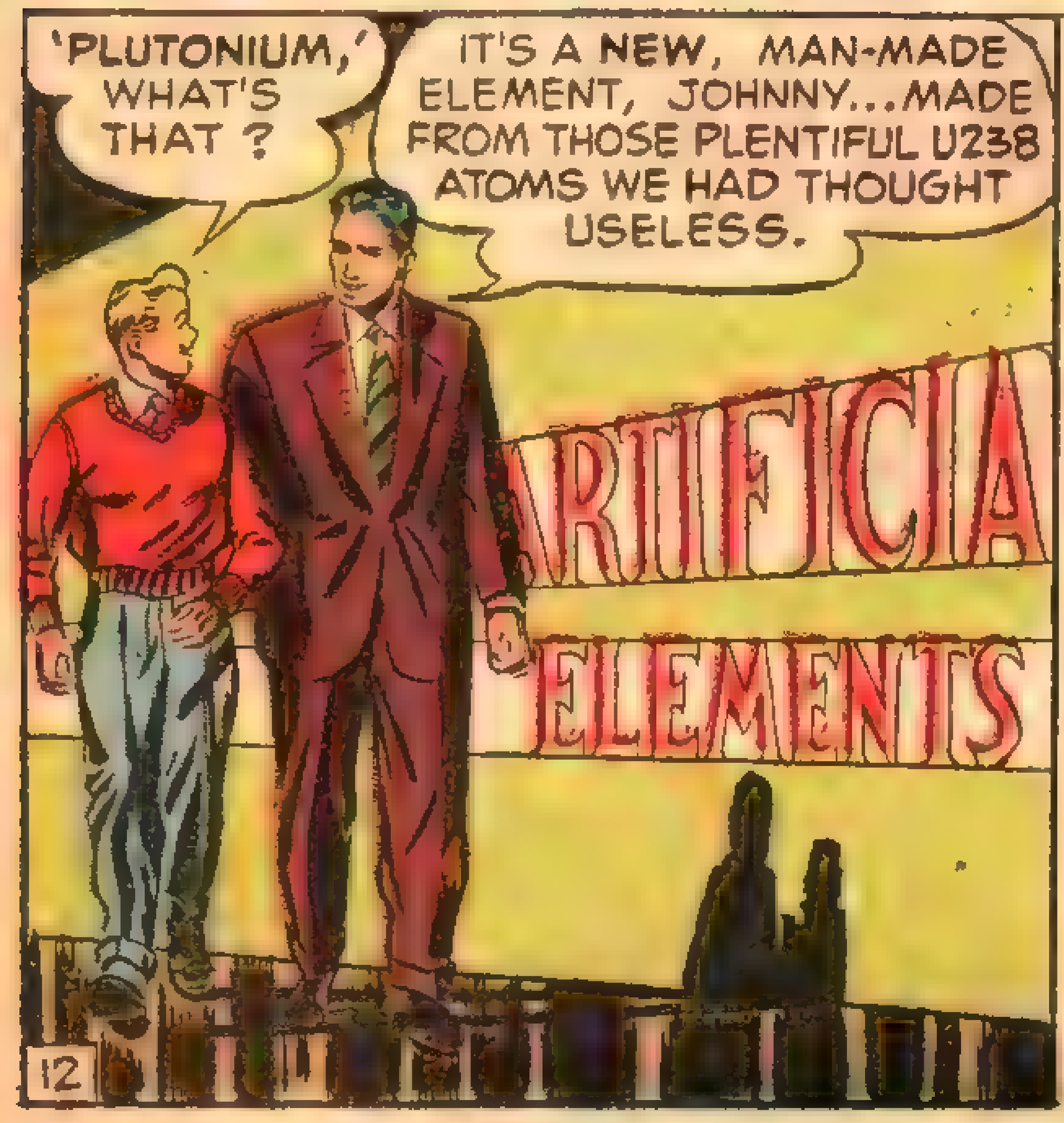

MR. PRESIDENT, PROFESSOR EINSTEIN ASKED THAT HIS LETTER BE DELIVERED TO YOU PERSONALLY.
'...PROBABLE THAT A NUCLEAR CHAIN REACTION CAN BE SET UP... VAST AMOUNTS OF POWER... GENERATED...'

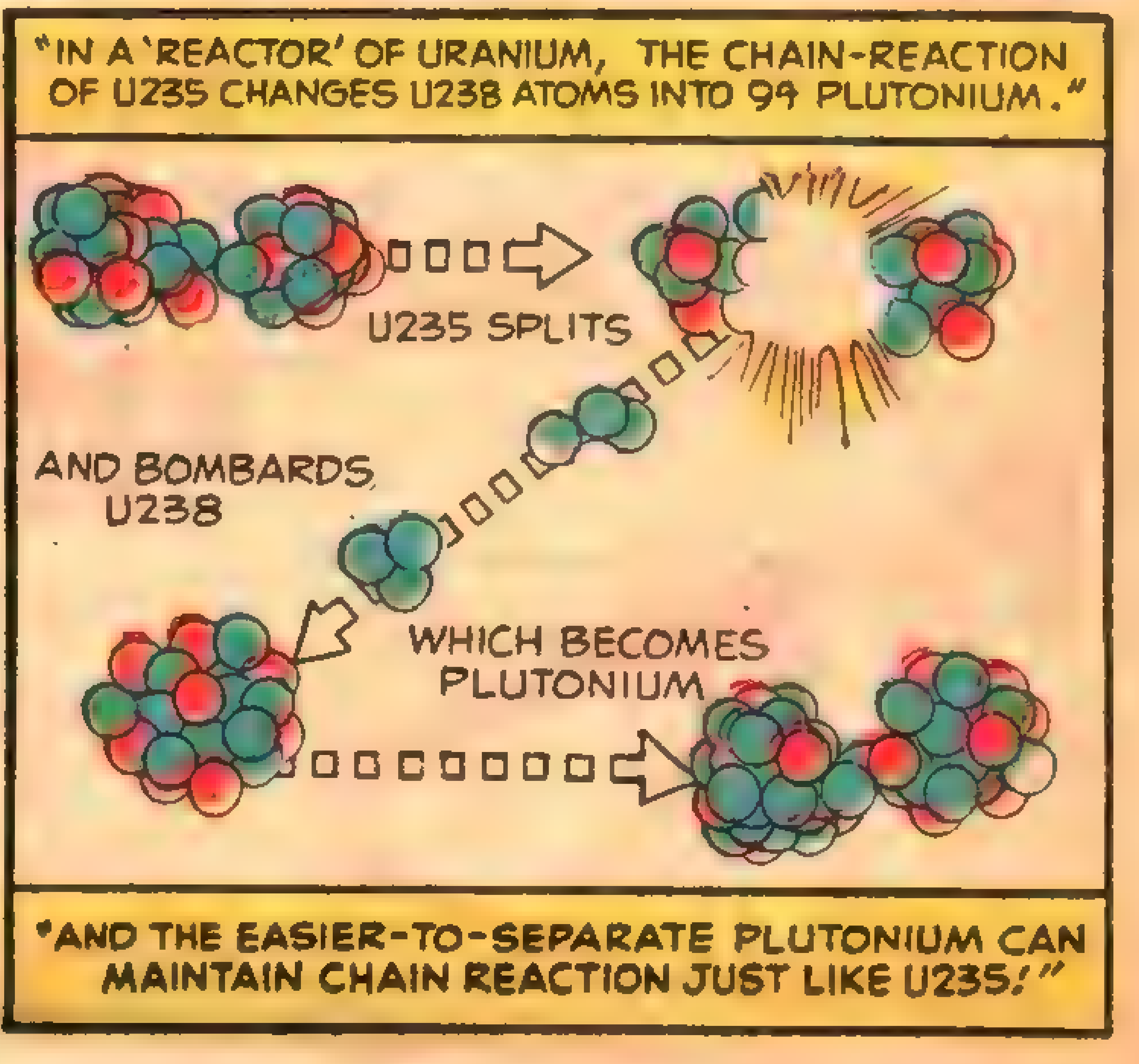

"AND THE PRESIDENT OF THE UNITED STATES BROUGHT TOGETHER HISTORY'S LARGEST COMBINATION OF..."
"THE FABULOUS RESOURCES OF THE WORLD'S RICHEST NATION"
"THE 'KNOW-HOW' OF AMERICA'S GREAT BUSINESS LEADERS"
"THE KNOWLEDGE OF THE WORLD'S MOST BRILLIANT SCIENTISTS"
"AN ARMY OF SKILLED INDUSTRIAL WORKERS"
"...TO BUILD A TREMENDOUS NEW INDUSTRIAL CITY TO SEPARATE U235 FROM ITS CHEMICAL TWIN, U238."
"THE SECURITY OF MILITARY POWER"


"JOHNNY, TEAM-WORK CAN DO **ANYTHING!** GENERAL ELECTRIC AND OTHER COMPANIES DID THEIR SHARE OF THE 'IMPOSSIBLE' BY BUILDING MANY SPECIAL KINDS OF ELECTRICAL EQUIPMENT IN RECORD-SMASHING TIME!...AND SOON...
"IN THE MULTI-MILLION-DOLLAR PLANT AT OAK RIDGE, ENOUGH PURE U235 WAS SEPARATED TO START A CHAIN REACTION."


GEE, ALL THAT JUST TO MAKE A BOMB!
TO END THE WAR QUICKLY, NO EFFORT WAS TOO GREAT, JOHNNY...AND WE TRIED TO PRODUCE ANOTHER SOURCE OF ATOMIC POWER

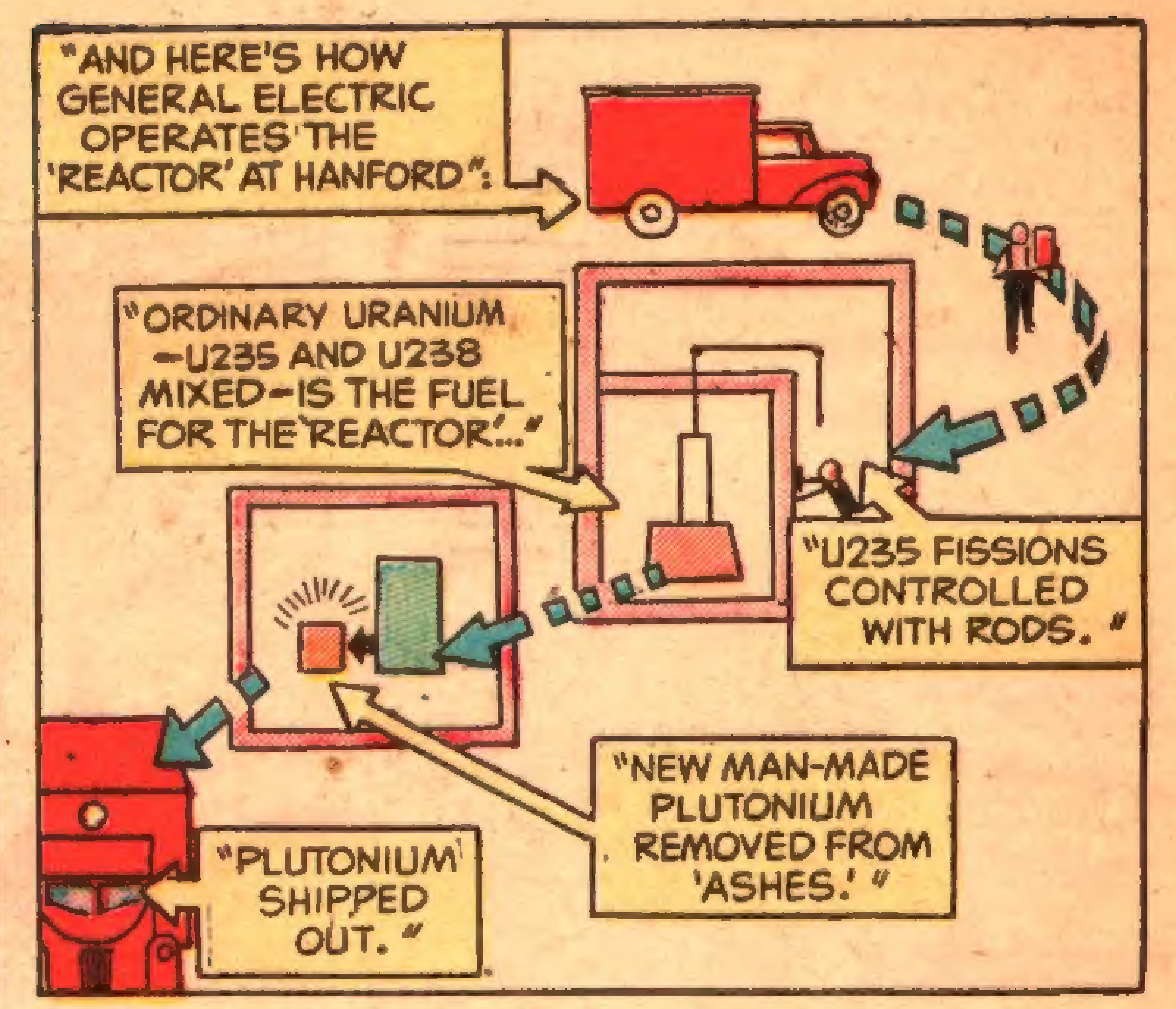

"WE FOUND OUT IT COULD BE DONE ON DECEMBER 2, 1942 IN A SECRET EXPERIMENTAL LAB UNDER THE "STAGG FIELD" GRANDSTAND IN CHICAGO..."
IT'S WORKING! WE'VE SET UP A **CONTROLLED** CHAIN REACTION!
AND WE'RE **CREATING** PLUTONIUM!!

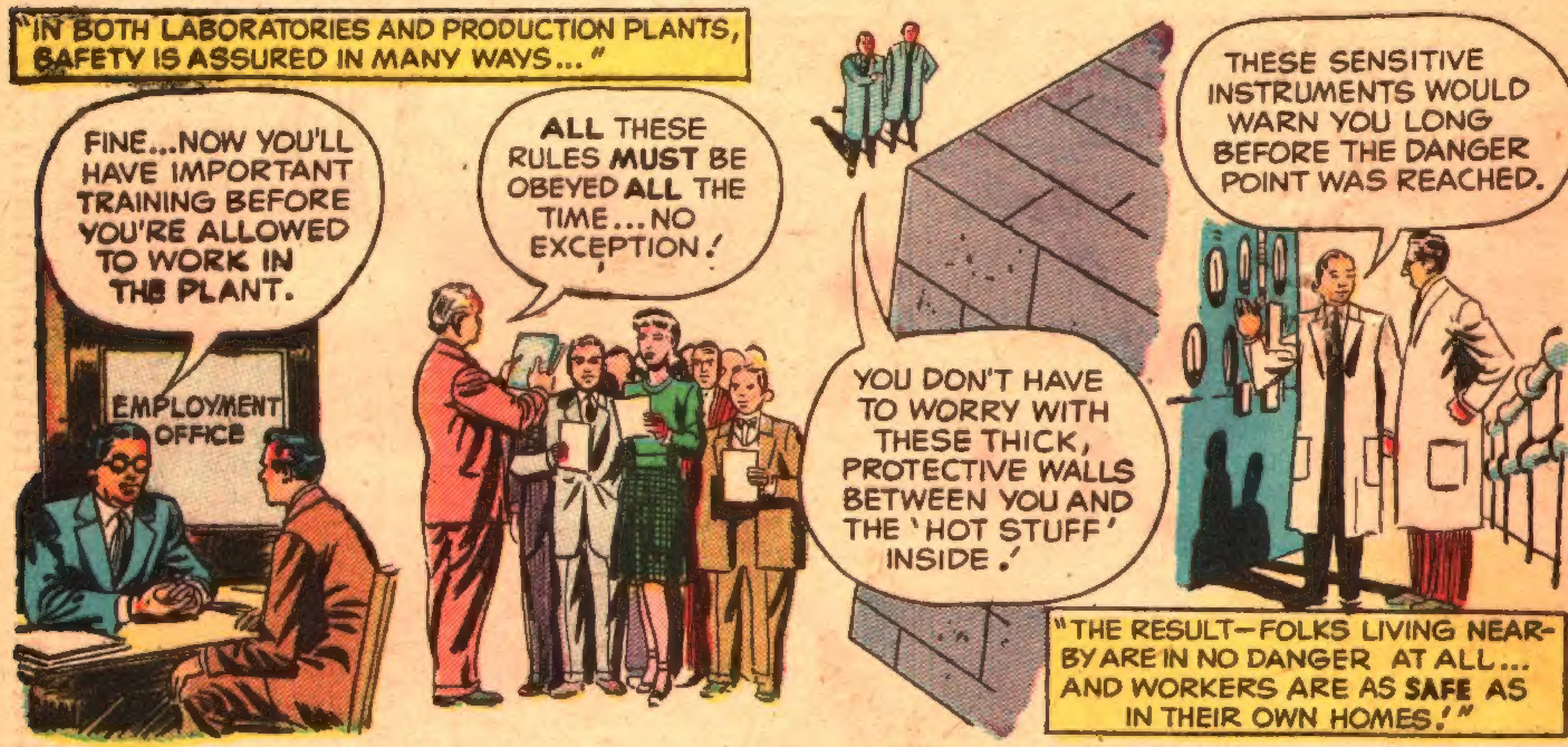

'PLUTONIUM,' WHAT'S THAT?
IT'S A **NEW**, MAN-MADE ELEMENT, JOHNNY...MADE FROM THOSE PLENTIFUL U238 ATOMS WE HAD THOUGHT USELESS.
ARTIFICIA
ELEMENTS

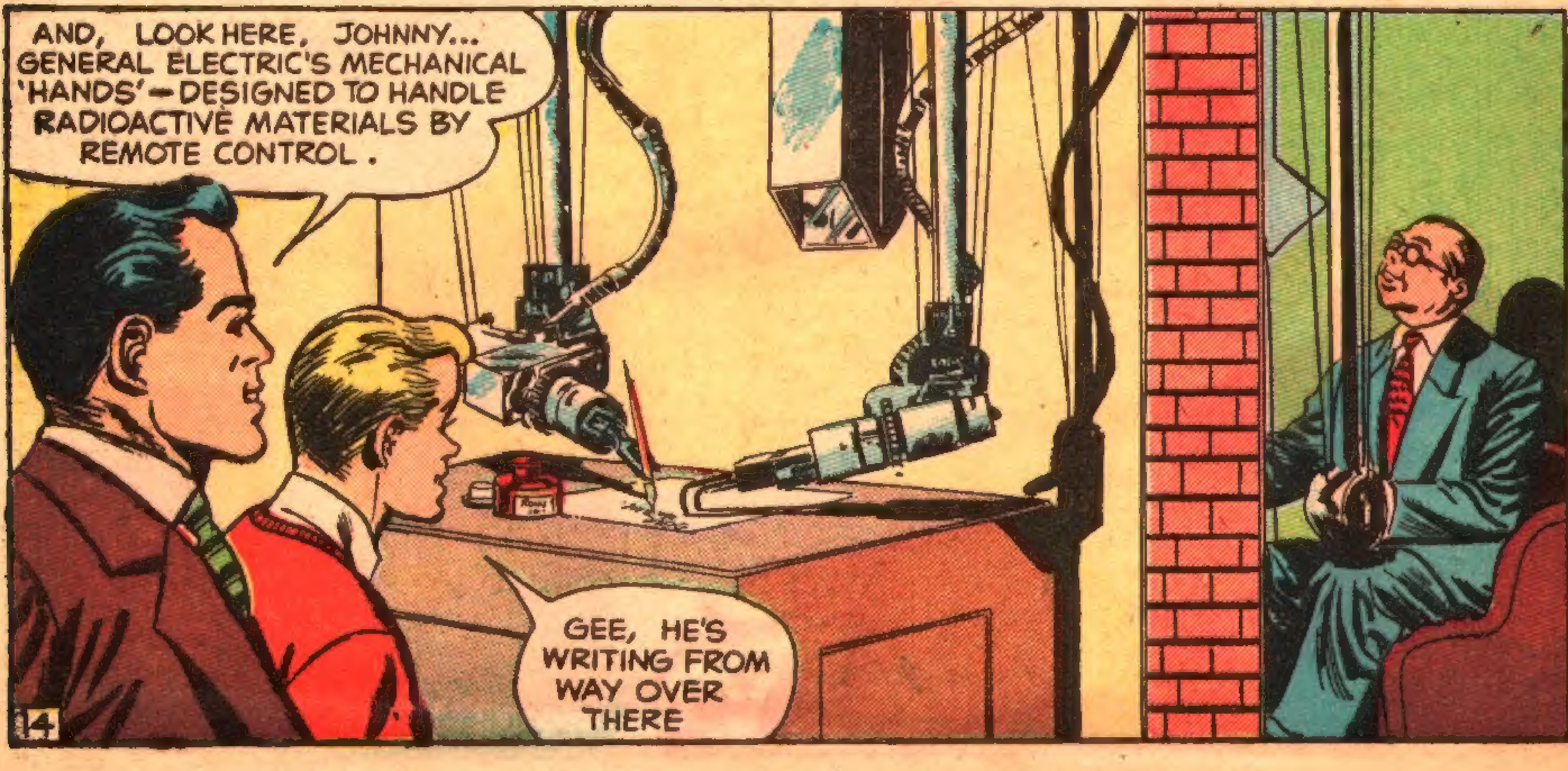

"IN A 'REACTOR' OF URANIUM, THE CHAIN-REACTION OF U235 CHANGES U238 ATOMS INTO 94 PLUTONIUM."
U235 SPLITS
AND BOMBARDS U238
WHICH BECOMES PLUTONIUM
"AND THE EASIER-TO-SEPARATE PLUTONIUM CAN MAINTAIN CHAIN REACTION JUST LIKE U235!"

"AND SO, AT HANFORD, WASHINGTON, UNCLE SAM BUILT A GREAT NEW KIND OF PLANT. IT'S NOW OPERATED BY GENERAL ELECTRIC FOR THE ATOMIC ENERGY COMMISSION...AND THERE WE'RE MANUFACTURING PLUTONIUM IN GIANT 'REACTORS.'"
HANFORD
403,200 ACRES
WHAT'S THAT 'REACTOR' YOU'RE TALKING ABOUT, ED?
THEY'RE 'FACTORIES' WHERE WE CAN **CONTROL** A CHAIN REACTION OF SPLITTING ATOMS. LIKE THIS...
"NOTICE HOW THE WOODEN MATCH STICKS SLOW DOWN THE CHAIN REACTION OF THE MATCH-HEADS..."
"IN A 'REACTOR' URANIUM RODS ARE SEPARATED BY GRAPHITE TO SLOW DOWN THE NEUTRONS."
GRAPHITE BLOCK
238
235
NEUTRONS JOINING 238 TO FORM PLUTONIUM
URANIUM RODS
238
235
NEUTRONS SLOWED BY GRAPHITE
UH HUH...BUT, WOULDN'T THE 'REACTOR' FINALLY EXPLODE ANYWAY?
NO, BECAUSE...JUST AS THIS WET BLOTTER CAN PREVENT THE FIRE FROM SPREADING...
"...ADJUSTABLE CONTROL RODS IN THE 'REACTOR' ABSORB NEUTRON BULLETS...THE MORE 'BLOTTING' RODS THE LESS FISSIONS."
CONTROL ROD ABSORBS NEUTRONS
238
235
238
235
URANIUM RODS

HERE, LET'S WORK THIS MODEL 'REACTOR'. THE GRAPHITE SLOWS THE RATE OF FISSION AND ADJUSTING THESE CONTROL RODS REGULATES THE AMOUNT OF FISSION.


"AND HERE'S HOW GENERAL ELECTRIC OPERATES THE 'REACTOR' AT HANFORD":
"ORDINARY URANIUM —U235 AND U238 MIXED—IS THE FUEL FOR THE 'REACTOR'..."
"U235 FISSIONS CONTROLLED WITH RODS."
"NEW MAN-MADE PLUTONIUM REMOVED FROM 'ASHES.'"
"PLUTONIUM SHIPPED OUT."


"IN BOTH LABORATORIES AND PRODUCTION PLANTS, SAFETY IS ASSURED IN MANY WAYS..."
FINE...NOW YOU'LL HAVE IMPORTANT TRAINING BEFORE YOU'RE ALLOWED TO WORK IN THE PLANT.
EMPLOYMENT OFFICE
ALL THESE RULES MUST BE OBEYED ALL THE TIME...NO EXCEPTION!
YOU DON'T HAVE TO WORRY WITH THESE THICK, PROTECTIVE WALLS BETWEEN YOU AND THE 'HOT STUFF' INSIDE!
THESE SENSITIVE INSTRUMENTS WOULD WARN YOU LONG BEFORE THE DANGER POINT WAS REACHED.
"THE RESULT—FOLKS LIVING NEARBY ARE IN NO DANGER AT ALL... AND WORKERS ARE AS SAFE AS IN THEIR OWN HOMES!"


AND, LOOK HERE, JOHNNY... GENERAL ELECTRIC'S MECHANICAL 'HANDS'—DESIGNED TO HANDLE RADIOACTIVE MATERIALS BY REMOTE CONTROL.
GEE, HE'S WRITING FROM WAY OVER THERE

BUT, ED, WE **STILL** HAVEN'T GOTTEN AROUND TO **USEFUL** ATOMIC POWER!
WELL, YOU HAVE TO ADMIT WE'RE GETTING CLOSE...EINSTEIN'S THEORY—AND THE TREMENDOUS ENERGY RELEASED IN EACH NUCLEUS-SPLIT—AND OUR CONTROLLED CHAIN REACTION... NOW, FOR THE **LAST** STEP...
"...WE'RE BUILDING 'THE KNOLLS ATOMIC POWER LABORATORY' NEAR SCHENECTADY, NEW YORK, WHERE WE WILL LEARN TO USE **ATOMIC FUEL**..."
UNDER CONSTRUCTION BY THE GENERAL ELECTRIC COMPANY
"...AND WE EXPECT TO USE ITS TREMENDOUS HEAT-ENERGY TO GENERATE ELECTRICAL POWER—PERHAPS, LIKE THIS..."
HEAT FROM REACTOR TURNS WATER INTO STEAM IN HEAT EXCHANGER
STEAM
WATER
STEAM TURNS TURBINE—SPINS SHAFT OF GENERATOR WHICH CREATES ELECTRIC POWER...
TO LIGHT AND RUN A CITY!
SURE—AND HOW ABOUT ALL THOSE OTHER THINGS...
"ATOMIC FLYING MACHINES ON MY BACK."
"ATOMIC DISINTEGRATOR GUNS."
"ATOMIC ROCKETS TO THE MOON."
"ATOMIC 'PILLS' TO RUN OUR AUTOS FOR YEARS."
HOLD ON, JOHNNY... YOU'VE BEEN READING TOO MANY COMICS!

WITHOUT GETTING FANTASTIC, THERE ARE ENOUGH **WONDERFUL** THINGS POSSIBLE. WITH ATOMIC ENERGY WE CAN...
"MAKE NEW FORMS OF PLANT LIFE..."
"USE RADIOACTIVE TRACERS TO HELP CURE DISEASE..."
"CHANGE ELEMENTS AND CREATE NEW ONES..."
"PERHAPS POWER BIG SHIPS AND SUBMARINES..."
"...AND, PROBABLY GENERATE TREMENDOUS ELECTRIC POWER."
"SOME DAY THERE WILL BE ENOUGH POWER FOR EVERYBODY EVERYWHERE."
CAREFUL ATOMIC FUEL
EIRE
ICE
ALASKA
GOLLY, I CAN SEE IT ALL NOW...
YOU'RE LUCKY, JOHNNY...FACING A WONDERFUL FUTURE!
I KNEW IT, ED... BUT **NOW I UNDERSTAND IT A LOT BETTER!**
THINGS TO COME

GENERAL ELECTRIC
Schenectady, New York

A Pyramid Scan
P
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